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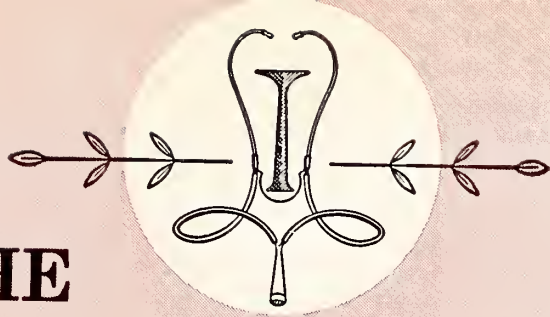
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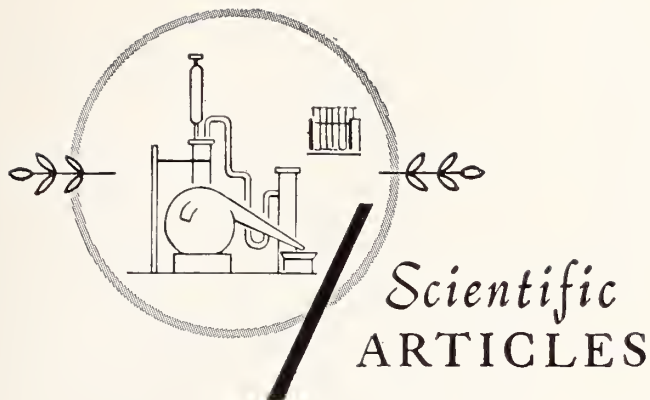
and jitteriness. In contrast, CNS depression has been reported. In a few epileptics an increase in convulsive episodes has been reported. Sympathomimetic cardiovascular effects reported include ones such as tachycardia, precordial pain, arrhythmia, palpitation, and increased blood pressure. One published report described T-wave changes in the ECG of a healthy young male after ingestion of diethylpropion hydrochloride; this was an isolated experience, which has not been reported by others. Allergic phenomena reported include such conditions as rash, urticaria, ecchymosis, and erythema. Gastrointestinal effects such as diarrhea, constipation, nausea, vomiting, and abdominal discomfort have been reported. Specific reports on the hematopoietic system include two each of bone marrow depression, agranulocytosis, and leukopenia. A variety of miscellaneous adverse reactions have been reported by physicians. These include complaints such as dry mouth, headache, dyspnea, menstrual upset, hair loss, muscle pain, decreased libido, dysuria, and polyuria.

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Trichinosis

Report of Two Cases and a Brief Discussion

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Case Number One

A 55-YEAR-OLD WHITE WOMAN was admitted to St. Luke's Hospital complaining of diarrhea and swollen eyes. Cramping abdominal pain and diarrhea had begun ten days before admission, and she then experienced generalized weakness, anorexia, and migrating muscle pains. She had been continuously nauseated but vomited only once. Two days before admission she awoke with swollen eyelids and puffy cheeks. There was no significant past history. She had no known allergies and took no medicines.

The vital signs were normal except for a temperature of 101.0°. Examination of the eyes was normal except for periorbital edema. There was mild axillary lymphadenopathy. Splinter hemorrhages were present in the fingernails. Otherwise, the physical examination was entirely normal.

The leukocyte count was 12,300/mm³, with 51 per cent neutrophils (including 3 per cent bands), 14 per cent lymphocytes, and 35 per cent eosinophils. On other occasions the eosinophils reached 45 per cent of the differential, and the highest total eosinophil count was 2,903/mm³. Non-specific and mild ST and T wave changes were seen in the electrocardiogram.

Normal values for the following laboratory tests were obtained: hemoglobin, hematocrit, sedimentation rate, FBS and two-hour post-prandial glucose, creatinine, SGOT, serum protein electrophoresis,

heterophile, febrile agglutinins (for Salmonella, Brucella, tularemia, Proteus), PBI, VDRL, urinalysis, and chest and barium enema x-rays; stool examinations for ova and parasites were negative and cul-

Trichinosis is reported to be the commonest helminthic infection of man. Most cases are so mild, and symptoms and findings so non-specific, that the disease is not diagnosed. Few infected persons do demonstrate recognizable illness, which may be severe, but which also may be easily and rapidly diagnosed and treated. Two interesting cases are presented here, followed by a concise discussion of the pathogenesis, symptomatology, diagnosis, current treatment, prognosis, and prophylaxis of trichinosis.

tures grew normal flora; spinal fluid contained only two lymphocytes/mm³, normal protein, glucose, colloidal gold, Kolmer, and negative smear and cultures.

The patient had no more diarrhea after her admission, and she was treated with rest and salicylates only. On the third hospital day a trichinosis skin test was performed; a positive reaction of the delayed type produced 12 mm induration after 24 hours, with a negative control injection. The fever, periorbital edema, and myalgia gradually subsided

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and she was asymptomatic at the time of her discharge on the eighth hospital day.

Even though a source of this infection was not identified, and no *Trichinella* larvae or cysts were found (in rather incomplete attempts), the probable diagnosis of trichinosis was based on the significant history and typical findings of fever, periorbital edema, splinter hemorrhages, leukocytosis, marked eosinophilia, and positive trichinosis skin test. However, other diagnostic aids are available for making the definite diagnosis of trichinosis. In comparison to this report, the following one exemplifies a more nearly complete and correct evaluation of a case of trichinosis.

Case Number Two

A 37-year-old white male was referred for evaluation of left hemiparesis. He had been in good health until two weeks before admission, when he first noticed swelling of his eyes, face, neck, and hands, associated with a mild headache. These symptoms subsided spontaneously in two days, following which diarrhea occurred for two days. Over the next ten days, impairment of recent memory, confusion, generalized weakness, fever, and chills were experienced in succession. During the few days before admission, marked weakness began in the left arm and leg, and swelling in the eyes and hands recurred. Although he had been hospitalized elsewhere (without a diagnosis), he was then referred to us specifically for further diagnostic studies of his progressive neurological symptoms.

At admission the patient appeared healthy and the vital signs were normal. Three- to five-millimeter splinter hemorrhages were noted in the fingernails. Confusion and recent memory impairment were notable; the cranial nerves were intact; no sensory abnormalities were present; on motor examination there was moderate weakness in the left extremities; tendon reflexes were normal, and there were no pathological reflexes. The remainder of the physical examination was normal.

The initial impression was left hemiparesis, etiology to be determined.

The following abnormal laboratory values were obtained: erythrocyte sedimentation rate 32 mm per hour, white blood count 18,760/mm³ with 46 per cent segmented forms, 13 per cent lymphocytes, 6 per cent monocytes, and 35 per cent eosinophils; bone marrow examination showed approximately 50 per cent eosinophils but was otherwise normal; alkaline phosphatase 105 mU/ml (normal 30 to 75), LDH 680 U/ml (normal 200 to 500), cholesterol 308 mg per cent; the ECG showed non-specific but diffuse ST changes and T wave flattening.

Other initial laboratory values were normal: hemoglobin, hematocrit, FBS, GTT, BUN, creatinine, uric

acid, calcium, phosphorus, bilirubin, SGOT, VDRL, urinalysis, chest and skull x-rays, and electro-encephalogram; the spinal fluid contained no cells, normal protein, glucose, and VDRL, and negative cultures and India ink preparation; no ova or parasites were seen in the three stool examinations.

The admission Bentonite flocculation test for trichinosis was positive 1:640. Within 20 minutes of injection, a trichinosis skin test showed five millimeter induration with erythematous pseudopodia covering a three centimeter diameter area; the control was negative. A left deltoid muscle biopsy showed non-specific acute and chronic myositis. In view of the positive serological and skin tests for trichinosis, marked eosinophilia, generalized T wave changes on ECG, swelling of the face and hands, splinter hemorrhages, and increasing cerebral symptoms and signs, the diagnosis of disseminated trichinosis was made. The patient was treated with dexamethazone, 4 milligrams every six hours for three days, then in decreasing doses. He remained afebrile while under our observation, although fever had been reported before admission. There was steady improvement of his muscular weakness and mental confusion. Use of thiabendazole was considered, but was deemed unnecessary in view of the satisfactory response to dexamethazone. By the sixteenth hospital day the alkaline phosphatase had returned to 50, the LDH to 165, and the Bentonite flocculation test had increased to 1:2560. He was discharged on the twenty-fourth hospital day, and three weeks later was apparently completely recovered.

Discussion

Trichinosis is a self-limited infection of the human intestine (by the adult roundworm, *Trichinella spiralis*) and of striated muscle (by its larvae). It is the commonest helminthic infection of man and is estimated to affect over twenty million persons in the United States,¹ although new evidence indicates its prevalence is progressively decreasing.² From ingested cysts the young larval worms enter the intestinal mucosa and lymphatics, from which they may reach the blood stream, thereby gaining access to all parts of the body. They cause inflammation wherever they lodge even though they are capable of encysting only in striated muscle, most often the diaphragmatic, intercostal, masseteric, laryngeal, lingual, extraocular, pectoral, deltoid, biceps, and gastrocnemius muscles. The cysts average 0.4 by 0.25 mm, are completed in one to three months, and usually have become calcified by nine to eighteen months. In other tissues, such as the central nervous system, eye, and myocardium, the larvae soon disintegrate and are absorbed.

The intestinal phase of trichinosis is rarely diagnosed. Mild constitutional symptoms resemble many

other diseases, and it is thought that only a small percentage of infected persons have a sufficient number of larvae to produce the clinically recognizable disease. Most symptoms occur during larval invasion and migration in the second week of infection, as a result of local inflammation when larvae invade vital organs and tissues. During and after the third week, migration and encystation cause a systemic reaction of the host to this foreign protein.

Trichinosis is one helminth infection that consistently causes a fever, which usually falls by lysis. Edema is common, particularly in the periorbital area. Six to seventeen per cent of patients with symptomatic trichinosis will exhibit symptoms of central nervous system invasion, manifested by headache, tinnitus, vertigo, deafness, confusion, memory loss, stupor, psychotic behavior, delirium, coma, or varied focal neurological signs of mono-, hemi-, para-, and tetraplegia, aphasia, convulsions, or polyneuritis.^{3, 4} Encephalitis is more common during larval migration, focal signs more common during encystation. Cardiovascular system involvement may produce electrocardiographic changes (23 per cent),^{3, 4} precordial pain, tachycardia, hypotension, venous and arterial thromboses, and subungual splinter hemorrhages. Usual laboratory findings are leukocytosis, eosinophilia (as high as 85 per cent—"of all diseases associated with eosinophilia, trichinosis produces the highest values regularly found"⁵) and elevated SGOT and SGPT.

The definitive diagnostic test is identification of larvae in a muscle biopsy. The intradermal skin test may become positive from the eleventh to the twenty-eighth day of infection, and will remain so for two to five years; either an immediate reaction in 15 to 20 minutes or a delayed reaction in 12 to 24 hours is considered significant. Precipitin, complement-fixation, and flocculation serologic tests are useful, particularly when showing a rising titer. The Bentonite flocculation test is most useful for detecting antibody in the acute stage; the Sussenguth-Kline flocculation test is recommended for detecting chronic infection.

Treatment begins with rest, adequate fluid and caloric intake, and relief of pain by salicylates. The anti-inflammatory effects of corticosteroids usually afford prompt relief of fever, edema, muscular pain, and CNS symptoms, although the larvae themselves are not actually affected. Thiabendazole^{2, 6-8} has been demonstrated to kill the majority (but not all) of tissue larvae in animal experiments, and to eradicate the intestinal adult worms in some species. The mechanism of action is not known. Since its introduction in 1967 it has been used experimentally for treating many human helminth infections, with some notable successes. In trichinosis it seems to provide as much and as rapid symptomatic improvement as do

corticosteroids, and it provides a larvicidal effect in addition. Side effects are mild and subside when the drug is withdrawn. It now appears that there should be no hesitation to include thiabendazole in the treatment of trichinosis.

The prognosis is generally good, and residual muscular or central nervous system damage is unusual. However, overwhelming infections may lead to death from encephalitis, myocarditis, or pneumonia. The mortality rate is generally regarded as five to six per cent, but vital statistics fail to confirm this high a rate. "Either the mortality figure is too high, or many fatal cases are clinically misdiagnosed."³

Human trichinosis can be prevented by the sufficient cooking of all meat, especially pork. Interruption of the worm's life cycle by cooking garbage fed to animals (especially hogs) is recommended.

GENERIC AND TRADE NAMES OF DRUGS

1. Dexamethazone—Decadron
2. Thiabendazole—Mintezol

References

1. Most, H.: Trichinellosis in the United States: Changing epidemiology during past twenty-five years. *JAMA* 193:871-873, September 13, 1965.
2. Sanford, J. P.: Trichinosis. From: Conn, H. F., Ed.: *Current Therapy* 1969. Philadelphia, W. B. Saunders Co., 1969, pp. 79-80.
3. Barr, R.: Human trichinosis: Report of four cases, with emphasis on central nervous system involvement, and a survey of 500 consecutive autopsies at the Ottawa Civic Hospital. *Canad. Med. Assn. J.* 95:912-917, October 29, 1966.
4. Gray, D. F., Morse, B. S. and Phillips, W. F.: Trichinosis with neurological and cardiac involvement. *Ann. Intern. Med.* 57:230-244, August, 1962.
5. Aikawa, J. K.: Trichinosis. From: Conn, H. F., Jr., et al., *Current Diagnosis*. Philadelphia, W. B. Saunders Co., 1966, pp. 101-102.
6. Model, W., Ed.: Drugs for parasitic infections. *Med. Lett. Drugs Ther.* 11:21-28, March 21, 1969.
7. Council on Drugs: Evaluation of a broad-spectrum anthelmintic thiabendazole (Mintezol). *JAMA* 205:122-123, July 15, 1968.
8. Hall, W. J. III and McCabe, W. R.: Trichinosis: report of a small outbreak with observations of thiabendazole therapy. *Arch. Intern. Med. (Chicago)* 119:65-68, January, 1967.

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Rubella

Does She or Doesn't She?

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Introduction

RUBELLA IS A COMMON benign exanthematous disease of children and young adults. However, when it occurs in pregnant women, especially during the first trimester, it becomes a leading cause of congenital defects. It has been estimated that the rubella epidemic of 1964-1965 caused serious birth defects in more than 20,000 babies. Various congenital defects have been observed in 33, 25, 9, and 4 per cent of babies whose mothers experienced clinical rubella during the first, second, third and fourth month of pregnancy respectively.¹

An effective live attenuated rubella virus vaccine is now available. A single subcutaneous injection produces a protective level of antibodies in about 95 per cent of vaccinees. Vaccinated individuals, however, shed non-communicable virus from their pharynx for a few weeks after vaccination.[†] The vaccine is recommended for boys and girls between the ages of one year to puberty who constitute the main source of virus dissemination. Infants less than one year of age and pregnant women (as well as women who may be pregnant or may become pregnant within two months) should not be vaccinated because in the former group the maternal antibodies may interfere and in the second, the infectivity of the live vaccine for the fetus has not yet been delineated.²

About 18 million doses of the vaccine will be available within the next nine to twelve months for the immunization of children and seronegative women of childbearing age. However, a rubella epidemic may occur in the winter and spring of 1970-1971. Since various recent serologic surveys have indicated that about 13 per cent of young adults are susceptible, a dilemma similar to that which confronted the obstetricians during the 1964-1965 epidemic may be in the offing. A pregnant woman manifesting a rubella-like exanthem during the first trimester is often psychologically involved and understandably inquisitive about her fetus. Moreover, a similar situation may present itself when such a pregnant woman is exposed to the disease but does not manifest the symptoms, because subclinical infections are known to be as deleterious to the fetus

as clinical infections. Since abortion is now legalized in a number of states on the grounds of preventing the birth of a baby with serious defects, the obstetrician is confronted with the responsibility of advising the parents as to whether or not the pregnancy should be terminated. The obstetrician's advice must be based on laboratory findings as a number of other viruses, notably enteroviruses, may cause rubella-like syndromes. Laboratory results, thus, provide the evidence for determining whether the involved patient does or does not have rubella. Fortunately at the present time, laboratory methods for delineating the immune status and the diagnosis of maternal rubella are both rapid and highly dependable. However, the tests must be performed by experienced laboratory personnel and the results interpreted jointly by the obstetrician and the responsible virologist.

Laboratory Diagnosis

Laboratory diagnosis of rubella can be achieved by two procedures: (a) isolation and identification of the virus from clinical specimens, and (b) serologic tests indicating a significant rise in rubella antibodies during the convalescence phase of the disease. Isolation of the virus requires special types of cell cultures, e.g., African green monkey kidney cell cultures, and involves further subpassage and the performance of an interference test in order to detect the presence of rubella virus in the inoculated cell cultures. Presumptive results may be obtained in two weeks. Confirmation, however, requires another seven to ten days.³ One major handicap is that up to 30 per cent of African green monkey kidney cells (presently regarded as the most reliable system for the isolation of this virus) may be resistant to rubella virus, thus producing false negative results.⁴ It is, therefore, recommended that laboratory diagnosis of rubella ought not depend on the isolation procedure.

The serologic tests involve three main procedures: (1) the hemagglutination-inhibition (HI) test; (2) the complement fixation (CF) test; and (3) the neutralization test. Of these, the third procedure (neutralization test) requires cell cultures and is (as in the isolation procedure) complex and time consuming. However, it is a most sensitive procedure. The CF test is a rapid (overnight) *in vitro* test but

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† Numerous studies have indicated that the virus shed by vaccinees does not infect susceptible contacts.

is less useful than the HI test since in the course of the disease CF antibodies rise much more slowly than HI antibodies. The HI test is, thus, the test of choice and is presently commonly used for the laboratory diagnosis of rubella.

Reliable hemagglutinating (HA) rubella antigen is now available from a number of biologic manufacturers. This antigen causes agglutination (clumping) of chick erythrocytes which can be specifically inhibited by rubella antiserum. In the performance of the HI test, sera from suspected patients are first treated with certain chemicals and heat to destroy natural humoral inhibitors that can interfere with the test. The treated sera are then diluted serially and added, each dilution, to appropriate amounts of HA antigens. Mixtures of the two reagents are allowed to react with one another and then appropriate amounts of chick red cells are added. Those dilutions of sera that contain rubella antibodies would react with the rubella HA antigens and thus inhibit the latter from causing the agglutination of the added chick cells. Sera from convalescent rubella patients may inhibit the agglutination at dilutions (titers) of 1:180 or higher.*

Interpretation of Laboratory Results

Women of childbearing age who have contracted rubella in their childhood generally possess clearly detectable HI antibodies (usually 1:20 or higher). The usefulness of the HI test is thus twofold. It can detect current infection as the HI antibodies rise shortly after the appearance of the rash and reach high levels in six to eight days. When a pre-rash serum is available, a diagnostic rise (fourfold or more) is usually detectable during the early phase of convalescence. In contrast, the CF antibodies do not appear until one week or longer after the rash. Moreover, the HI test has proved a highly reliable procedure for determining the immunity status and hence susceptibility of individuals to the rubella virus. It is thus strongly recommended that all women contemplating pregnancy be tested for rubella HI antibodies. If a protective level (usually 1:20 or higher) is detected, the involved woman is assured of not contracting rubella during her contemplated pregnancy. If, on the other hand, no significant HI antibodies could be detected, the woman can be vaccinated provided that the precautions outlined above are strictly observed. However, currently obstetricians are often confronted with cases of pregnant women of unknown immune status who have been exposed to rubella. Under such circumstances, sera should be obtained immediately after exposure

and tested for HI antibodies. If protective levels are detected, no alarm bell need be sounded. When no antibodies are detected, a second and a third (each two weeks apart) are collected and tested for HI antibodies. If no rise in antibody titer is detected, it is concluded that infection was not contracted and that the subject remains apparently fully susceptible to rubella. On the other hand, when a gradual rise in the HI antibody titer is detected, it is concluded that the exposure has resulted in the transmission of infection and the likelihood of fetal damage must be seriously considered.

Problem Cases

These cases are presented by pregnant women who seek medical care several weeks after exposure to rubella. They may report the occurrence of rash and other rubella-like symptoms a week or two prior to seeing their obstetricians. Many of them, however, relate a history of childhood rubella that cannot be considered seriously as a number of other viruses may have caused the childhood rubella-like syndrome. Sera obtained from these women at the time may show rather high levels of rubella antibodies. Moreover, sera obtained in subsequent weeks show the same or insignificantly (twofold) lower or higher titers. Thus the HI results do not delineate the course of the infection that resulted in the development of the high-titered antibodies. Such antibodies may have been induced by an infection contracted after the exposure or by a subclinical infection contracted a few months prior to conception. Obviously the former possibility poses a problem.

Recent immunologic investigations have provided certain helpful approaches to the above problem. It is now well established that the first immunoglobulins produced after primary infection with the rubella virus are of high molecular weight, namely, IgM or 19S. Subsequently, immunoglobulins of lower weight, i.e., IgG (7S) and IgA (9-15S) are rapidly produced; a month after the onset of the rash, IgM antibodies cannot be generally detected while IgG and IgA antibodies are elevated and persist at detectable titers for many years. The above observation is currently utilized for distinguishing between recent and past infections. Sera obtained during convalescence and showing high levels of HI antibodies are tested for IgM and IgG antibodies. If a significantly increased concentration of total IgM but not IgG is detected, it is safe to conclude that the involved patient had a recent infection. Conversely, absence of IgM and presence of IgG in such sera indicate past infection. It should be emphasized that the elevated levels of IgM persist for about three weeks and thus the test is useful only when the high titered sera are obtained within this period.

* The range of HI titers obtained at different laboratories vary with the various proposed procedures for performing the test.

Several procedures have been proposed for the quantitation of serum IgM and IgG. The simplest is treatment of sera with 2-mercaptoethanol (which splits large molecules into smaller ones) and testing the treated along with untreated sera for rubella HI titers.⁵ If the treated sera show significantly (at least fourfold) decreased titers as compared to the untreated, the dominance of IgM antibodies and hence the occurrence of a recent infection is indicated. When the two sera show essentially the same titer, a recent infection can be ruled out. Other procedures which are more complex but apparently more reliable include separation of the two immunoglobulins by sucrose density gradient centrifugation,⁶ immunofluorescence test with antihuman IgM and IgG conjugates⁷ and radial diffusion-in-gel method.⁸

Congenital Rubella

Infants congenitally infected with rubella virus generally harbor the virus at birth and continue to shed the virus for up to three years. The virus can be isolated from the throat, urine, spinal fluid and many other tissues. Infected neonates, however, possess high-titered HI and neutralizing antibodies consisting of both IgM (endogenous as these immunoglobulins are not transferred across the placenta under normal conditions) and IgG (maternal) antibodies. Thus the presence of significant levels of IgM in the cord or neonate serum indicates active synthesis of these immunoglobulins by the fetus which, in turn, indicates congenital infection. Elevated IgM levels are also encountered in congenital herpes simplex and cytomegalovirus infections as well as in congenital toxoplasmosis and certain bacterial infections.

In congenitally infected infants, the concentration of maternal IgG rubella antibodies continue to decrease during the six to twelve months following birth while the levels of IgM remain high throughout infancy. Hence serodiagnosis of congenital rubella can be accomplished by either demonstrating significant specific rubella HI antibodies in the IgM moiety of the cord or neonate sera (up to about three months), or the persistence of high levels of total rubella HI antibodies beyond six months after birth when maternal antibodies are disappearing and the endogenous antibodies are formed in response to an active infection. Procedures mentioned above are also utilized for the detection of rubella IgM antibodies in cases of congenital rubella.

Summary and Conclusions

Although an effective live virus vaccine is now available for the control of rubella, an epidemic of this disease similar to that of 1964-1965 may recur

in 1970-1971. Due to teratogenic effects of rubella virus on the fetus, especially during the first trimester, many obstetricians may have to consider abortion procedures when laboratory tests can provide evidence of maternal infection. If pre-rash and convalescence sera are available, the hemagglutination inhibition test, which is very reliable and simpler and less time consuming than other serologic and isolation techniques, can readily provide the desired evidence. However, problem cases arise when only single sera (either convalescent or those obtained more than three weeks after exposure to rubella) showing high-titered HI antibodies are available. In such cases determination of IgM antibodies helps decide whether the antibodies are due to a recent or a past infection. Serodiagnosis of suspected congenital rubella of the neonate also makes use of the IgM determination. In view of the above problems and as an effective approach to the prevention of possible congenital defects among our population, it is strongly recommended that women contemplating pregnancy be tested for rubella antibodies and if found devoid of same, they should be vaccinated with the new vaccine at least two months prior to contemplated pregnancy. This preventive approach could also be effected by constituting a required premarital test for rubella immunity and compulsory vaccination of those women who lack the proper levels of antibodies.

Acknowledgement and Addendum

The author wishes to thank Dr. Geoffrey G. Logan, Assistant Professor of Obstetrics and Gynecology, University of Kansas School of Medicine, for reviewing the manuscript. Dr. Logan expressed the opinion that the pre-marital period may not be the right time for vaccination as a minimum of caution and contraception may be exercised during this time. Instead, he proposed vaccination at the termination of the first pregnancy when, during the puerperium, there exists a "built-in" period of involuntary infertility which may be prolonged by the use of oral contraception.

References

1. Lundstrom, R.: Rubella during pregnancy. *Acta Paediatrica Scand.* 54 (Suppl. 133):1:110, 1962.
2. Committee on Control of Infectious Diseases, American Academy of Pediatrics, Rubella Virus Vaccine. *Pediatrics* 44:21-23, July 1969.
3. Phillips, C. Alan; Behbehani, Abbas M.; Johnson, Lawrence W.; and Melnick, Joseph L.: Isolation of rubella virus. *JAMA* 191(8): 615, 1965.
4. Whitmire, Carrie E.; Fuccillo, David A.; Gitnick, Gary L.; and Sever, John L.: Problems in the detection of rubella virus in African green monkey kidney tissue culture. *Proc. Soc. Exp. Biol. & Med.* 128:253, 1968.

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Screening Tests for Hearing

Hearing Conservation in Rural Communities: A Successful Mobile Audiology Project in Kansas, U.S.A.

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(A condensed version of this paper has been presented by the author to the IX International (World) Congress of Otorhinolaryngology sponsored by Sociedad Mexicana De Otorhinolaryngologia in Mexico City, August 10-14, 1969, in accordance with their 10-minute reading time requirement.

Simultaneously, a sound movie film directed by the author was presented in the Cinema Section. The movie showed the mobile truck unit in operation and demonstrated the details of the testing technique while the unit was in actual use.)

THE STATE OF KANSAS is the heart of the Wheatland in the center of the U. S. A. Its miles and miles of farmland and ranches have very few cities but many small towns and smaller communities. These thousands of productive acres give us small population groups which are scattered throughout the large geographic areas, producing serious problems in supplying required services to our school children. A 1962 survey of the estimated 380,000 school children enrolled in 105 counties, showed that at least 172,000 (45 per cent) had no audiometric screening at all or only partial coverage. By actual count, 75 per cent of the communities did not have adequate and comprehensive hearing conservation programs: five counties had only partial coverage; 33 had only one community with testing facilities; and 46 had no audiometric screening at all.

To help bring such services to these small scattered population groups the Kansas State Department of Health¹ developed in 1963 a mobile truck unit that could carry the message of hearing conservation to these outlying areas. So successful has this project been that by 1968 only eight of the 105 counties (less than 10 per cent) still had no program of hearing conservation.

The entire concept of state-wide hearing conservation project was conceived by the director and as-

sistant director of the Maternal and Child Health Division of the State Department of Health—Patricia T. Schloesser, M.D. and Evelyn S. Gendel, M.D., and implemented through a five-year financial grant by the U. S. Public Health Services.[†]

Through the cooperative efforts of several groups the program was shaped to reality by: Primarily, of

This paper presents an effective method of screening the hearing of school children in rural areas and any other group of institutionalized persons where hearing test equipment and personnel are not readily available.

course, the State Department of Health; (2) the State Department of Education; (3) the University of Kansas School of Medicine; (4) the Committee on Conservation of Hearing and Speech composed primarily of otolaryngologists in private practice; (5) a professional Advisory Committee composed of various specialists from these groups, plus additional talents as needed. Through their combined efforts a mobile unit was organized consisting of two certified audiologists, a public health nurse plus a clerk-stenographer. This dedicated unit centered around a large self-propelled truck which contained a diagnostic audiometer in each of two sound-proof rooms.

The hearing conservation project had a four-fold purpose.

1. The main objective was to promote interest in the conservation of hearing on the pre-school and school age level. It was designed to stimulate the communities which did not have such conservation programs to develop and maintain valid hearing test services.

2. The next objective was to discover the number and types of hearing impairment throughout

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† The Neurological and Sensory Disease Service, Chronic Disease Division of the United States Public Health Service, Dept. of Health, Education and Welfare (HEW).

the state, a figure which until now had been only a guess. The medical literature listed may estimates from various surveys throughout the country showing variations of 5 per cent to more than 20 per cent of hearing loss in school and general populations.

3. The third objective was to find and identify the individual children with hearing loss so that their rehabilitation could be accomplished either by medical treatment, by speech and hearing therapy or by a combination of these.

4. Most important to our discussion today, the project served to evaluate the effectiveness and practicality of a mobile hearing test unit in a rural environment where children did not have available the audiometry and test facilities which the children in the big cities took for granted.

The project directors and advisory groups listed above considered various alternatives including a detachable trailer unit pulled by a power unit with a cab but this would add considerable expense since it would require a professional driver. At a total initial expense of about \$27,000 a self-contained bus chassis 34 feet long was built. Experience soon revealed that a third axle was needed to properly distribute the 17-ton load so an additional \$5,000 was expended. While the unit was planned for our flat lands, the lack of sufficient horse power in the motor proved to be a major handicap in moving about the steeper, hilly portions of the state and must be well calculated in any future construction.

Built into the moving-van frame eight feet wide and twelve and one-half feet high were two, six feet by six feet sound-proof testing rooms; one at each end, with an intermediate office that also functioned as a reception and storage area. The test rooms were built to rigid specification standards set by Dr. Eldon Eagles² in his famous five-year hearing conservation survey sponsored by the American Academy of Ophthalmology and Otolaryngology Subcommittee on Conservation of Hearing. Each room had a diagnostic audiometer built in. Three portable audiometers for screening purposes were carried, along with complete equipment, for calibration of audiometers.

Heat was supplied by a propane gas wall heater. Electricity could be obtained from a built-in gas powered dynamo, but usually an extra-long extension cable was connected to the school or building visited for electrical power for lights, air conditioning and the audiometers. Approximately \$44,000 per year was required as the minimum budget for operation and maintenance of the unit including salary and travel expenses for unit personnel.

The duties of the medical doctors acting as directors and assistant directors were supervisory, except for the very important initial active planning

of the project and the arrangement of the schedule of visits to the schools. Their time was donated by the Department of Public Health since they were already on state salary. However, since this was a voluntary project which visited only those schools and communities requesting the services, much time was spent by the doctors and nurses on "selling" the project to all three local groups; the parents and the community members; the local school authorities; and finally, even the local physicians, to assure them that there would be no expense to the students and schools and that no treatments or charges would be imposed on them. It was shown that the survey would be merely a screening examination to find those cases with impairment and that detailed diagnostic services to those impaired children would then be available. The diagnostic clinics were one-day affairs usually conducted about one month later, in which most of the hearing impaired children from the communities were seen in a local school or office by a volunteer practicing otolaryngologist from some nearby area of the state. Some of the parents elected to have their children examined at their own expense by an otologist at a medical center. This helped determine the type of impairment and their causes and to suggest remedies where applicable.

The hearing conservation director and assistant director* were both certified audiologists. They did the actual work of testing, reporting and analyzing plus such tasks as driving the truck to the rural areas, helping to plan the trip schedules, to set up equipment on arrival and to test and calibrate equipment. These were the highest paid members and the success or failure of the project depended upon their dedicated work.

Next in importance was the public health nurse† whose ability to act as liaison proved most necessary and useful. She conducted meetings with school personnel and local groups, with local school authorities, parents and doctors prior to arrival of the truck. She proved invaluable by orienting the children and volunteer workers preliminary to the screening tests but more so, in follow-up of cases after finding measurable hearing loss. These required repeat visits with the parents and family doctors before and after the diagnostic clinics, as well as actual setting up and supplying special assistance to the clinics themselves.

* Gilbert G. Ritchey, M.Ed., Director, Hearing Conservation Program, 1965-68. Robert C. Cozad, M.A., Director, 1963-65.

Larry Marston, M.A., Asst. Director, Hearing Conservation Program, 1963-66. Mrs. Carol Ritchie, Mr. Nick Winchell, Miss Pat Henrie, 1966-68.

† Miss Pamela Frazier, R.N., 1966-68. Mrs. Rebecca Manning, R.N., 1966. Miss Amelia Villamaria, R.N., 1963-66.

A clerk stenographer[‡] was vital to the function of the survey and clinics not only to maintain and consolidate the vital statistics but to execute the voluminous mail involved in establishing contacts, arranging schedules and local rules of operation of the survey team plus maintaining a mobile office that moved through many varieties of environment and circumstances.

In addition to these paid members, the project depended very strongly on the generous support of unpaid volunteers such as the principals and teachers of the rural schools; the local nurses when available, such as county nurses, school and district health nurses, members of Parent-Teacher Association, the Red Cross, local civic organizations and sometimes by the students themselves.

The final generosity came from the practicing otolaryngologists—mostly from the membership of the Committee for Conservation of Hearing and Speech—who rotated in donating one or two days at a time to man the diagnostic clinics. An average of 55 children was seen at each clinic, always at the request of and in cooperation with the local physician. Any recommendations for treatment were directed through him. No charge was made to the patient's family.

Results

Utilizing sweep test methods with hearing dials set at 10 decibels (ASA) or 20 decibels ISO for tones 250, 500, 1M, 2M, 3M, 4M, 6M, and 8M cycles per second, two audiologists at maximum efficiency can screen up to 500 children in a six-hour school day. This, of course, requires good advance planning by the project nurse in her preliminary meeting with the school personnel and the local groups plus orientation of the children and the volunteer workers as to the procedure of the screening program after arrival of the mobile unit at the school.

After screening has been completed at any one school or community, all those who failed are brought back for a second screening. Those who fail the second test are then given a complete pure-tone air and bone conduction threshold test. Our Conservation Committee set as a minimal standard of referral to the physician a loss of 20 decibels in two or more tones or a 30 decibel loss in any one tone. That child would be referred to his family physician for study and treatment or his doctor's referral to an otologist of their choice or to the diagnostic clinic, usually organized one month later for that region or county.

In spite of almost 18 months delay in organizing

and implementing the study, a total of 69,643 school children were audiologically screened.

An average of 14 per cent failed the first screening test.

Enough passed the second screening test so that a final total of *over 10 per cent had failed both tests*.

Of these 5,614 school children, the majority showed insignificant losses which were not manifested by clinical or scholastical problems and were not referred to their doctors.

Two thousand, four hundred and seventy-one (3.6 per cent) were considered clinically significant and were referred to their physicians.

About one-third of these were seen at the diagnostic clinics. Of the remaining two-thirds, figures are not available as to how many were seen by otologists and how many by family physician only. Only 281 had previous knowledge of their hearing problem.

It is interesting to see the breakdown of the various types of diagnoses established in the entire total of 6,212 children in schools and institutions (*Table 1*). This apparently varied much with the age and the sex.

One notes the concentration of conductive losses in the under-7 age group where otitis media is the usual cause. (Relatively higher percentage is in girls.) The concentration of sensory-neural (nerve type) losses up to 73 per cent in the over-7 age group is found significantly higher in boys because of their more frequent exposure to gunfire, tractor noise and other acoustic trauma.

From a public health and sociological point of view there were significant differences found in several special groups. During a test session of migrant children of migrant farmers, 6 per cent showed clinical impairment; pre-school children in day-care centers in two counties showed 8 per cent; in the state's two corrective institutions (detention homes) for delinquent minors, hearing defects were found in 29 per cent in the boy's school and 12.5 per cent in the girl's school. These figures compare with the 10 per cent found in so-called normal children throughout the public school system.

In the delinquent children group it is interesting to speculate whether the high percentage of hearing impairment was a result of their delinquent habits; possibly poor food or living environment at home and the associated neglect of health, or conversely; if the hearing defect caused enough social handicap, and personality change to lead to delinquent behavior. One sees how improved a child can be—how a shy, withdrawn backward child or, conversely, the stubborn, defiant child—can change from a behavior problem to a sociable, cooperative pleasant child. We

[‡] Mrs. Clea Rutherford, 1963-68.

TABLE 1

	Total	Under Age 7	Over Age 7	Boys	Girls
Conductive	823 (13%)	300 (4%)	523 (10%)	499 (10%)	390 (28%)
Mixed	745 (11%)	199 (3%)	547 (10%)	509 (10%)	169 (13%)
Sensory Neural	643 (73%)	372 (4.7%)	4,271 (68%)	4,062 (79%)	788 (58%)
	6,212	871	5,341		

note how frequently the family and school personnel are surprised to find that the "stupid, backward, mentally retarded" child can become a bright co-operative student when his hearing loss is detected and is corrected by medical care or hearing aid. One wonders how many of the delinquent children could have been started on a constructive, beneficial course by correction of hearing or other defects. One begins better to appreciate the value of routine extensive screening for health problems in children and the value of parent education as to these health benefits whether it be ears, eyes, heart, lungs, teeth, bones or joints.

Summary

This paper presents an effective method of screening the hearing of school children in rural areas and any other group of institutionalized persons where hearing test equipment and personnel are not readily available.

This method and technique evolved from a trial project that successfully accomplished all of the following goals:

1. To point out the importance of early detection and treatment of hearing problems in school age children.
2. To stimulate interest and show the benefit of a hearing conservation project in the local community where that is feasible.
3. To bring hearing conservation to those schools in Kansas or to any rural area anywhere which have not had such a program.
4. To encourage education in the prevention of hearing loss.
5. To encourage the establishment of habilitation and rehabilitation services for those children who have irreversible hearing impairment.
6. To determine by actual testing and head count the exact number of hearing impaired children and the percentage of the total school population involved.
7. To determine the percentage of conditions correctable either by medical treatment or by special training (with or without hearing aids) or by both.

References

1. Schloesser, Patricia T., Gendel, Evalyn S., Ritchey, Gilbert, Robinson, Norman, et al.: *Final Report of a Hearing Conservation Program for Children*. Publication of Kansas State Department of Health, 1963-68.

2a. Eagles, E. L. and Wishik, S. M.: A study of hearing in children; objectives and preliminary findings. *Transactions of the American Academy of Ophthalmology and Otolaryngology* 65:261 ff., May-June, 1961.

2b. Eagles, E. L. and Doerfler, Leo G.: Hearing in children; acoustic environment and audiometric performance. *Journal of Speech and Hearing Research* 4:149-163, June, 1961.

5. Cooper, Louis Z.; Matters, Barbara; Rosenblum, Jean K.; and Krugman, Saul: Experience with a modified rubella hemagglutination inhibition antibody test. *JAMA* 207:89, 1969.

6. Best, Jennifer M.; Banatvala, J. E.; and Watson, D.: Serum IgM and IgG responses in postnatally acquired rubella. *The Lancet*, pp. 65-68, July 12, 1969.

7. Cohen, Sophia M.; Ducharme, Claire P.; Carpenter, Charlotte A.; and Deibel, Rudolf: *J. Lab. & Clin. Med.* 72(5):760, 1968.

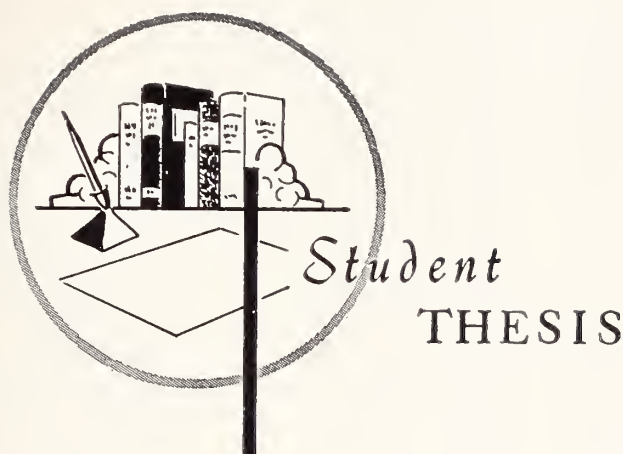
8. White, Lon R.; Sever, John L.; and Alepa, F. Paul: Maternal and congenital rubella before 1964: Frequency, clinical features, and search for isoimmune phenomena. *J. Pediatrics* 74(2):198, 1969.

Rubella

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The Pathogenesis and Treatment of Frostbite

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COLD IS AN ELEMENT having great influence on the life of man. For the most part, this has been a deleterious influence except when adequate protection has been available. It is of interest that evidence exists which indicates that the faces of some men have been shaped by cold. It is the deleterious effect of the cold with which this discussion is concerned. The most widely prevalent, dangerous and disabling form of damage from cold is that of frostbite.

A breakdown and brief definition of the various injuries sustained when man is exposed to the cold includes chilblains, trenchfoot, immersion foot, and frostbite.

Chilblains is defined as exposure to a temperature greater than freezing in a high humidity leading to painful erythema which clears with warming.

Trenchfoot results from prolonged exposure of the feet to cold and wetness at a temperature of 20.0 F to 50.0 F from two hours to fourteen days.

Immersion foot develops after long immersion of the feet in cold water at a temperature of 25.0 F to 60.0 F from twelve hours to seven days.

Frostbite is the actual freezing of tissues at temperatures often less than levels commonly associated with freezing.

There are many historical accounts of how cold has produced such severe injuries in soldiers that, in some cases, battles were won or lost because of such

injuries. The following section briefly discusses some such incidents.

The first detailed recital of a cold catastrophe in war was by General Xenophon in 400 B.C. He recounts incidents of total body freezing and prostration of his soldiers from chilling. He relates how they attempted to gain relief by rubbing themselves with oils of bitter almond, sesame and turpentine.

Polbius, Florus, and Livy described how Carthaginian mercenaries of Hannibal endured cold in the mountains of Italy because they smeared their bodies with oil. Quintius Carcus told similar stories involving soldiers of Alexander the Great.

Dr. James Thatcher made notation of serious American losses from cold injuries during the American Revolution, and the writings of Baron Dominique Larrey during the Napoleonic wars contained some of the first thoughts recorded regarding the treatment of frostbite.

In more recent times there have been injuries from the cold occurring in military personnel. In some cases there were more cold casualties than wound casualties. In the Crimean War, 1854-1856, there were 7,613 cold injuries; Franco-Prussian War, 1870, there were 4,692 cold injuries; Russo-Turkish War, 1877-1878, there were 4,800 cold injuries; Russo-Japanese War, 1904-1905, there were 1,469 cold injuries; Balkan War, 1912-1914, there were 2,850 cold injuries; World War I, there were 115,361 British cold injuries alone; World War II, there were 55,331 American cold injuries alone; and in the Korean War there were 5,300 cold injuries.

Although the figures given here are mainly repre-

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Cavanaugh is serving his internship at William Beaumont General Hospital, El Paso, Texas.

sentative of military cold injuries, the civilian population has also been affected by cold, but to a lesser degree. It is because of the very fact that cold does influence man in many ways, and especially through its injurious effects, that this paper on frostbite was thought to be of primary interest and importance. The pathogenesis of the injury will be discussed as well as the many possibilities of treatment.

Pathogenesis

In considering the pathogenesis of frostbite, an idea of the freezing point of human tissues is important. From studies pertaining to this subject, it has been found that the freezing point of fingers is between -0.53 and -0.63 C. It has also been found that the human body has a limit of tolerance to being immersed in water at a temperature of less than 68.0 F due to a greater loss of body heat than heat production. Also noteworthy is that once the rectal temperature dips below 95.0 F, heat production decreases, the respiration and circulation become irregular, and death ensues. From other studies there has been found a gradation in tissue susceptibility to cold injury; from the least to the most sensitive the list includes cartilage, bone, muscle, nerve, and bone marrow.

Other studies have shown that there may be other factors involved in determining the degree of injury involved in frostbite or who will be affected. It has been found that the Negro is more susceptible to cold injury than the white because of poorer vasoadaptive responses. Smoking has been shown to increase vasoconstriction, but studies show no significant difference between smokers and non-smokers in their susceptibility to cold injury. Those individuals who are prone to constant sweating are more apt to have severe cold injuries than non-sweaters, and those who have been injured once by cold are also more susceptible to subsequent injury. From investigations in the Antarctic, it has been shown that the onset of freezing of exposed skin under natural skin conditions is closely correlated with the wind chill index of 1,400 as calculated according to the Siple-Passel formula.

Because changes associated with frostbite are not unlike those associated with burns, it has been customary to classify the changes noted within the tissues according to degrees of tissue damage. Two systems are used today; the system dividing the classification into four degrees, and the system which classifies injuries superficial or deep. The former classification is as follows:

First degree frostbite—characterized initially by hyperemia and edema. After rewarming the skin is red, hot and dry. Edema develops within three hours, but this usually clears within five days. Superficial

desquamation of the skin occurs; then healing goes to completion without sequela.

Second degree frostbite—there is hyperemia with vesicle formation initially. Blisters and blebs form in six to twelve hours. There is deep pain with burning sensations throughout the course. When the vesicles dry, black eschars develop. These finally separate, revealing viable skin.

Third degree frostbite—there is necrosis of the skin and subcutaneous tissues. Edema, vesicle formation, and considerable pain is present. Eventually there is eschar formation, and with separation of the eschar poorly vascularized granulation tissue appears. This tissue eventually undergoes epithelization. Secondary infections are common and sequela include cyanosis and hyperhidrosis.

Fourth degree frostbite—there is complete necrosis and loss of tissue, including destruction of bone, with loss of the part. Dry gangrene usually ensues with mummification of the part. The line of demarcation appears in about 36 days.

The second common classification includes only two categories; superficial and deep frostbite.

Superficial frostbite involves only the skin or tissues immediately beneath it. The skin has a whitish or waxy appearance. After rewarming, the injured area becomes numb and mottled blue or purple. Swelling with stinging and burning follows. In more severe cases there is blister formation in 24 to 36 hours, with the tissue finally becoming dry and black in about two weeks. Swelling and edema usually decreases if the patient is put to bed. There is throbbing, burning and aching of the part for two weeks and after the swelling has decreased, the skin peels, and becomes red and tender. Subsequently the involved area will be extremely sensitive to cold. There is also excessive long-term perspiration.

Deep frostbite is a more serious condition. This form involves the skin, subcutaneous tissues, and even bone. Blisters appear within three days to a week and swelling and decreased mobility of the part lasts for a month or more. Discoloration of the part, ranging from blue, violet, to gray ensues. The gray coloration suggests the most serious injury. In a couple of days there is severe pain and throbbing. After the vesicles dry, black eschars form and may slough in a cast of the injured part. There is severe itching and perspiration. Healing may progress or gangrene may develop resulting in loss of the part.

Although the description and classification of frostbite appear to be well understood, the mechanism of injury remains in doubt. There are two schools of thought regarding the matter. One points to vascular injury as the primary feature, and the other contends that the direct effect of cold on tissues is the primary factor leading to tissue destruction.

Those believing vascular injury to be the primary cause of tissue destruction have many studies supporting the idea. It has been shown by bilateral arteriographic studies that there is spasm of the arterioles and arteriovenous fistulization with moderate frostbite, and in severe forms of frostbite it was noted that actual arterial occlusion from thrombus formation occurred. Supporting studies show marked vasoconstriction when a body part is cooled. It has also been noted that there is paralysis of vasomotor activity of both tonic and phasic responses in frostbitten tissue. It has been shown that after thawing there is a dilatation of the blood vessels with associated stasis of blood beginning in the capillaries progressing to completion in ten minutes. Arteriovenous anastomoses also appear, persisting for 24 hours but disappearing by 34 hours.

Since these three basic changes in the circulation have been described (arterial spasm, arteriovenous fistulization and thrombus formation), other studies have been done suggesting how these vascular changes lead to the tissue destruction.

In a study by Dunning it was noted that when the surface of the body was exposed to cold, cutaneous vessels contracted and blood flow to the area was decreased; nature's effort to decrease the loss of heat and maintain body temperature. He felt that vasoconstriction of the superficial vessels was caused by cold by stimulation from the vasomotor center in response to cooled blood, and by reflex afferent impulses from the cooled area. A further decrease in the limb temperature led to an inevitable vicious cycle. Cooling the skin to 59.0 F (15.0 C) resulted in oxygen requirement of the cells being less than that supplied, and the oxygen excess led to reddening of the skin. The arterioles contracted, dilated, and eventually closed. Cell metabolism stopped at 32.0 F (.0 C) and there was formation of ice crystals within the cells. There was always intense vasoconstriction involving the frozen part. The capillaries eventually dilated and developed increased permeability allowing plasma to enter the tissues, resulting in sludging of blood within the vessels. With rewarming of tissues there was further leakage of plasma into the tissues leading to edema and blistering. Red blood cells agglutinated and vascular occlusion followed. True thrombosis in this study, however, did not occur until after necrosis or after the intervention of secondary infection.

Other studies confirm the above findings and add interesting details. In experimental preparations it has been shown that stranded blood cells became necrotic due to the low available oxygen, and that such cells formed homogeneous eosinophilic masses called "hyaline thrombi." It is from such findings that the belief has arisen that tissue necrosis is caused by ischemia due to vascular occlusion, and that

arteriovenous shunting leads to tissue hypoxia, also adding to necrosis of the tissue part.

Studies with fluorescein dye techniques have shown that there is possibly a reaction by the blood vessels in an attempt to save the tissue when it is exposed to a moderate cold of 50.0 F (10.0 C). This reaction consists of decreased capillary permeability with parallel arterial constriction to decrease the amount of water getting into the tissues and thus averting tissue bursting from edema formation.

Along with the anatomic changes which take place in the circulation of the exposed part, studies have been done which measure the blood and lymphatic flow of the part involved in the frostbite injury. It was found in these studies that in moderate frostbite, freezing one hind leg of a dog produced no change in the blood pressure. There was a progressive decrease in blood flow during freezing and with thawing there was a flush lasting three to four minutes followed by edema formation. Upon withdrawal from the freezing solution there was an immediate and decisive drop in blood pressure with a slow rise which approximated normal in one hour. The blood flow increased after thawing, but not immediately. There was no decrease in blood flow with the post thawing drop in blood pressure. In the control hind leg there was a change in blood flow when the test foot was withdrawn from the freezing solution.

In the frostbitten leg there was an increased flow in the lymphatics after thawing indicating increased capillary filtration. Such increased flow lagged behind the increase in blood flow and reached its peak at the time of maximum edema. This increase of flow was short lived and fell to a fluctuating level. Protein concentration of the lymph was 2 to 3.6 grams per cent, and 1.3 to 1.4 grams per cent in severe frostbite. In the control limb there was no increase in the lymph flow and only a slight increase in protein concentration. There was also evidence of hemolysis in the lymphatics.

In minimal frostbite, 15-minute immersion at 23.0 F (-5.0 C) to 18.4 F (-8.0 C), there were blood pressure changes like those in moderate frostbite. In contrast to moderate frostbite there was an increase in flow during immersion, and there was no increase in flow after withdrawal of the part from the freezing mixture. The changes in the control foot were like those in the frostbitten foot. There was only a slight increase in the lymphatic flow after thawing, which indicated only minimal capillary change in permeability. There was only a slight increase in protein concentration.

In severe frostbite, -13.0 F (-25 C) for 30 minutes of immersion, the blood pressure change was like that in the moderate and minimal frostbite cases. Blood flow approached zero during immersion,

and after thawing the blood flow increased somewhat, but was very irregular thereafter. The lymphatic flow increased during thawing with a protein concentration of 1.3 to 4.4 grams per cent, and the rate of edema formation was extremely rapid after thawing.

Other changes in frozen tissues have been studied and these studies have shown that after a part has been severely frozen there may be no evidence of blood vessel elements present within the involved tissue. In a few days it was noted that there was an ingrowth of blood vessels from unfrozen tissues into the injured areas, and there was usually no necrosis of the tissue after the ingrowth of vessel elements had occurred. If, however, there was no ingrowth of blood vessels the part usually was necrosed. It was also noted in the tissues where there was not a complete loss of the blood vessel elements that there were defects in the arterial and venous portions of the circulation which appeared as thrombi. These defects usually disappeared but they sometimes formed arterial and venous constrictions. Some arterial and venous constrictions appeared without any obvious prefilling defects. These either disappeared or remained. The changes mentioned were usually associated with the longer and more severely frozen portion of the body, but this was not necessarily so.

From the above studies one can conclude that injury to tissues in a portion of the body exposed to the cold results from changes in the circulation. These changes include arteriolar constriction, capillary dilatation with increased permeability leading to edema formation, stasis sludging of blood left in the lumen, and arteriovenous fistulization leading to hypoxic metabolism. Although the changes presented do make good sense in explaining tissue injury, there remains the belief held by some that tissue injury results from the direct action of cold upon the tissues and that damage is not secondary to the blood vessel changes as described above.

In beginning the argument for this school of thought, Lewis reported that the degenerative changes in muscle were produced almost immediately after exposure to frostbite. He stated that early changes were not due to ischemia from stasis, sludging of red blood cells, or thrombus formation. He backed up his idea with evidence that complete ischemia was induced in an extremity of a rabbit for 45, 60, and 90 minutes, and that this action failed to result in any signs of muscle degeneration. From this study the conclusion was reached that the primary cause of muscle necrosis must have been the direct action of cold on the tissues.

Time sequence studies have also led some observers to believe that the initial factor leading to tissue necrosis is cold itself. Immediately upon thawing

frozen rabbit and rat hind legs, it was noted that there was rapid tissue swelling and the skin became intensely red. After 12 hours the color turned to a bluish hue. Blistering and exudation were in evidence. He noted that the edema changed from a viscous fluid to a liquid in 48 hours. Some blood was in evidence in the edema fluid eight to twelve hours after freezing.

Microscopically, it was noted after two hours that the histologic structure was completely disrupted. The muscle fibers were expanded and the interstitial spaces engorged with edema fluid. Many muscle fibers were fragmented and a great number were shrunken with some fibers appearing as if they had lost their protoplasm. It was also seen that the myofibrillar structure was lost, and the sarcoplasm was homogeneous. Nuclei were absent in some instances. Portions of the extracellular space were filled with a homogeneous eosinophilic edema and the fibrous network of endomysium was enlarged, containing swollen fibroblasts. It was also found that the capillaries were dilated and filled with erythrocytes, but no thrombi could be seen.

At four hours there was more extensive sarcolysis of muscle fibers. Vacuolization of the muscle fibers was in great evidence during this time period, and there was a definite increase in the destruction of erythrocytes. The interstitial spaces were filled with edema and much debris of nuclei, sarcoplasm and sarcolemma, but no thrombi were seen in the red-blood-cell-filled blood vessels.

Six hours showed the maximum changes noted. There was complete disruption of the histologic picture. The capillaries and other larger blood vessels were dilated and well filled with blood elements, but no thrombi were seen. It was of further interest that the blood vessels showed edema infiltration into the walls.

At eight hours the necrotic process appeared to be complete, and repair began with infiltration of leukocytes and macrophages into the injured part. Blood vessels were distended, but there was still no thrombi in evidence.

Upon examining the specimens at 12, 18, and 20 hours it was noted that there was no increase in muscle cell necrosis and repair was well in progress. Still no thrombus formation was noted within the blood vessels.

No further necrosis was seen at the 24 and 48 hour periods, and the repair process continued. At the 48 hour period there were some thrombi in the smaller and larger veins. At the 76 hour period there was no further necrosis, but thrombus formation was seen in many vessels.

From the results obtained in this study, it was

concluded that the tissue necrosis was due to the direct action of cold. Thrombus formation which would cause ischemia to the part was not in evidence until 48 hours. A study by Weatherly also gave histologic evidence that there was cold injury to a frozen piece of tissue 15 minutes after cold injury, whereas the earliest signs of vascular damage did not occur for several hours, and cell damage did not look like the changes found in necrosis. From this study he also concluded that injuries due to cold are a direct and immediate action of cold.

Another idea involving the direct action of cold is that there is mechanical damage to tissues from ice formation within the extracellular and intracellular spaces. It is thought that there are three stages involved in ice crystallization within involved tissues. The first stage appears to be the superficial spreading of surface moisture over surrounding tissues. The second stage involves the penetration of surface ice between the cells, with water leaving the cells upsetting cellular activity. At high sub-zero temperatures (less than 29.6 F (-2.0 C)) surface ice is observed, and at lower temperatures (29.6 F (-2.0 C) to 23.0 F (-5.0 C)) ice is observed extracellularly, leading to the penetration between the cells as described. Intracellular freezing at 14.0 F (-10.0 C) is the third stage of freezing. The cells appear as hyaline with extracellular freezing, and they appear granular after intracellular freezing. The erythrocytes burst when thawed, and ciliated cells after injury do not return to their usual activity of beating.

Electronmicroscopy shows that mechanical disruption due to formation of ice crystals undoubtedly plays a role in intracellular damage. Physical-chemical studies show that lipoprotein complexes of cell membranes are prone to injury due to an increased concentration of salts and pH changes during this period of injury.

The concept of chemical changes within the cells appears to explain why mechanical changes due to ice within the injured tissues are so lethal. It appears that ice formation outside of the cells in the extracellular fluid (ECF) increases the osmolarity of the ECF, and this causes intracellular dehydration. Dehydration of the cell leads to an increase in concentration of intracellular electrolytes, sugars, proteins, enzymes, enzyme substrates, and other solutes. From studies in this area it appears that the final intracellular concentration is a function of temperature; the lower the temperature the higher the concentration of the intracellular contents. From dehydration studies, it has been found that the lethal dehydration point for muscle cells is 78 per cent.

There is an increase in tissue lactic acid. There are pH changes, and proteins begin to precipitate out due to a salting out effect. Enzymes have been shown

to have a wide range of activities at different solute concentrations also. It is suggested by such studies that high concentrations of carbohydrates can bind to free amino groups of proteins leading to the detriment of the organism. It is further felt that resistance of different tissues to freezing is due to the difference in lipoprotein makeup of the various cell membranes.

From the above studies it can be concluded that cold can affect tissues directly without reference to blood vessel changes leading to ischemic states. In summary, the process of injury is initiated by ice formation within the ECF leading to an increase in ECF osmolarity with resultant intracellular dehydration. There follows an increase in concentration of the various components within the cell upsetting the biochemical environment of the cell.

Other types of injury have been described in the pathogenesis of frostbite, but most of these are minor in nature. One, however, merits mention. This concerns the skeletal changes in evidence with cold injury.

In 1943 observations of skeletal changes in soldiers with frostbite showed cartilage atrophy of the interphalangeal joints, small punched out areas of decreased density in juxta-articular joints, small destructive changes in cartilages of joints surrounding bones, and secondary arthrosis deformans. Changes in the cartilage of the interphalangeal joints was thought to be due to vascular damage. In most cases diffuse osteoporosis was apparent.

Soldiers injured by cold while stationed in Korea were observed to show definite x-ray skeletal changes. Some of these changes were early transient osteoporosis, mutilation of terminal phalanges, cyst-like defects of bone near joint surfaces of fingers and toes, early transient periosteal new bone formation, and growth disturbances in patients with open epiphyses.

It has been stated by some investigators that the most common skeletal change seen in frostbite is osteoporosis, but this is a later change and is a sign of bone still viable and having preserved vascularization. If no osteoporosis is noted in a severe frostbite injury, it can be a sign of non-viability of bone and tissue because of vascular damage.

Although the above observations have come from military studies, cases from the civilian population, while fewer in number, are equally convincing that frostbite causes skeletal changes.

Another change in body homeostasis associated with frostbite is secondary shock. This change is explained by the shift in body fluids because plasma leaves the blood vessels entering the surrounding tissues as edema fluid. This, however, is not a constant finding.

Because of tissue loss and skeletal changes noted in frostbite, many suggestions have been made for early prediction of probable amount of tissue damage.

Intravenous disulfine blue has been used for the purpose of determining the degree of vascular deficiency, assessing the progress of the lesion, and for evaluating the effects of therapeutic measures. Infra-red scanning techniques and fluorescence techniques have also been used for the same purposes.

From the above studies delving into the pathogenesis of frostbite, an interesting concept has evolved. This concept proposes that after a part of the body is frozen and recovers, the part is more prone to cold injury again, and that this injury will be more severe than the initial freezing. Many attempts have been made to explain this finding through theorizing the presence of abnormal cold cryoproteins. Perhaps the most plausible explanation rests in the observation that there is persistent vasospasm in a cold-injured part leading to dysfunction of local peripheral nerves or specialized organs of reception on the skin. Whatever the mechanism, an individual who has been frozen once needs to guard extremely well against being exposed to severe cold again.

A summary of the pathogenesis of frostbite is illustrated in *Figure 1*.

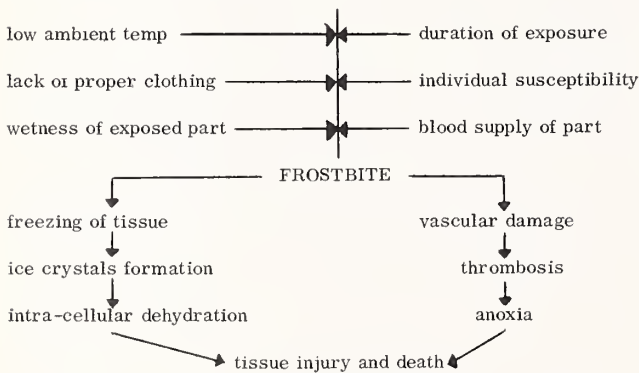


Figure 1. Summary of the pathogenesis of frostbite.

Treatment

In discussing the possible alternatives available for treating frostbite, one needs to keep in mind the tissue changes and hope for reversal of these changes. As has been emphasized, these are both vascular alterations and tissue changes produced directly by cold. In thawing there is more tissue water in the frozen state at a given temperature than at that same temperature while the process of freezing is in progress. Because of this fact it is necessary to remember that injury to the part can be had during the thawing process.

One of the most heated controversies that has been raging over the past few years concerns whether or not rapid warm thawing should be used as the initial treatment of frostbite. There are many studies which indicate that slow warming of the part in room air or through the use of snow, etc. should be the initial treatment. Most of these studies emphasize the importance of decreasing capillary pressure in order to decrease edema formation since these workers believe that one of the factors of tissue damage is hypoxic changes within the tissues because of the edema. Other arguments against quick re-warming with increased temperature include the following: severe pain from the disturbance of the metabolic processes of the cells, cramps in the involved blood vessels, paralysis of the blood vessels with obstruction of circulation, and deleterious stasis due to more rapid dilation of arteries than veins.

Opposing are those clinical investigators who feel that rapid rewarming is the most important and effective step in the initial treatment of frostbite. Most studies indicate that slow warming is without benefit. As has already been stated, damage to tissues is produced at the time of solidification of tissues and continues until tissue temperatures approach normal; consequently, it is of practical importance to rapidly thaw the tissues and warm such tissues until the injured part reaches body temperature. Most students agree that the effective rewarming temperature is 107.6 F (42.0 C). The warming procedure should be accomplished by immersion of the injured part in water warmed to 107.6 F and the temperature kept constant. The thawing time should be about 20 minutes. Analgesics may be necessary initially because of the pain produced by thawing, but usually diminishes as thawing continues.

Rapid thawing may initially cause more edema, but the important thing is that the cells are exposed to the high concentration of solutes for a shorter period of time with a rapid rewarming process. Convincing is the evidence that with rapid thawing there is definitely less tissue loss than with slow warming. Procedures after the thawing is complete are likewise controversial. One such procedure is the use of sympathectomy. Sympathectomy in frostbite has been found to be a procedure not done in final desperation in an already gangrenous limb, but instead a procedure which will mobilize the collateral blood supply, enhancing peripheral arterial blood flow.

Many studies have been done attempting to clarify the beneficial effect of sympathectomy. Some data suggests that circulation is improved, hyperhidrosis disappears, vasospastic complaints and Raynaud's phenomenon decreases, pain and paresthesia decreases, quicker healing of ulcers occurs, edema and tissue

loss is lessened, and finally there is decreased susceptibility to further cold and recurrent cold injury. It is of interest that this impression follows the hypothesis given in the discussion of pathogenesis. The reason that an individual is more susceptible to a second freezing is persistent vasospasm after an initial frostbite injury. Sympathectomy reverses this process, therefore making the individual less susceptible to a second freezing. Sympathectomy also reverses arteriovenous fistulization, but there appears to be little effect in guarding against thrombus formation. Timing for sympathectomy as a therapeutic procedure has also been studied. Following rapid rewarming, sympathectic denervation should be performed within 24 hours; however, even with sympathectomy performed late, improvement in the injured parts is noted. In an interval of days there is decrease in pain, decrease in edema, and rapid demarcation of the gangrenous part. Even in the interval of months or years there is a decrease in coldness and hyperhidrosis, decrease in cold sensitivity and burning, and decrease in cyanosis and numbness.

Anticoagulant therapy has also been used in the treatment of frostbite in an attempt to reverse the pathogenic change of thrombosis within the blood vessels which occurs with frostbite injury.

Heparin has been used in many studies to see what effect anticoagulation has on the frozen tissue. It appears that heparin does not prevent early clumping of red cells within the vessels, but it does prevent development of true agglutinative thrombi from clumped red blood cells by interfering with adhesiveness of the packed red cells and so helps to decrease ischemia and subsequent gangrene.

It has been pointed out, however, that in studies where heparinization was effective in decreasing tissue loss, it was necessary to begin the therapy within a short time after injury had occurred. It is of interest that one study showed it necessary to begin therapy within three hours after the injury or no significant difference was noted between treated and non-treated rabbits. Still another study, however, found that the therapy still gave significant results when the treatment was started within 16 hours after the initial injury.

It can be said, then, that the results of anticoagulant therapy are variable, but that most studies show good results.

The use of low molecular dextran in the treatment of frostbite has also been investigated. As has been stated earlier, in frostbite there is possibly hypoxia of the tissues due to defective microcirculation; i.e., conglutination of the red blood cells with escape of the plasma. It has been theorized that this blood vessel change may be reversed by the use of low molecular weight dextran. In rabbit and rat experi-

ments where the hind legs were frozen, it was shown that less tissue was lost in low molecular weight dextran treated animals than in controls.

The mechanism of action of low molecular weight dextran is probably that of increasing the osmolarity within the blood vessels. This decreases the blood viscosity and increases blood flow supporting perfusion of tissues not irreversibly injured at the time of exposure. Some studies do not show significant reduction in the amount of skin loss sustained in treated animals as compared with controls. Another important point to make is that low molecular weight dextran only should be used since high molecular weight dextran does increase blood viscosity leading to decreased blood flow.

The effectiveness of vasodilator drugs has also been investigated. Such treatment has, of course, been directed toward reversing the vasospastic response of the blood vessels to cold. The responses to the vasodilators has been variable, and no conclusions can be made concerning them. Some reports state that thymoxamine, as well as nicotiny alcohol, is useful in chilblains. Studies with tetraethyl ammonium chloride failed to show any usefulness in treatment of the cold injury.

Other types of drugs have also been studied in hope of finding a new and effective treatment for frostbite. Rutin, which has an action similar to procain anesthetization of the stellate ganglion, appears also to decrease the functioning of the capillary bed by tonic closure of a considerable number of precapillary sphincters. It does have some effect on the capillaries directly by increasing tone, decreasing fragility, and by preventing, or at least decreasing the passage of blood or plasma through the wall. Since histamine could cause capillary dilatation with stasis and thrombosis, Benadryl® has been also used in conjunction with rutin and with some beneficial results.

Another drug recently used in the treatment of chilblains is reserpine. The drug has reportedly also been of benefit when compared with untreated controls.

Corticosteroids and ACTH have also been used in the treatment of frostbite. Although there was with ACTH some lessening of the intensity and duration of some of the signs and symptoms, there was no prompt regression or prevention of capillary permeability, vasodilation, pain, hyperesthesia or gangrene. Most experiments on rabbits have shown no significant effect on severe cold injury.

Another uncommon method of treatment of frostbite has also been studied with some hopeful results. This method involves continuous epidural analgesia. It has been found that the autonomic and sensory fibers can be selectively blocked, and the idea of

"healing from within" was initiated from this concept. Of interest is that with this method, anticoagulants used in conjunction with analgesics seem to decrease thrombosis.

Mechanical methods have also been attempted in the treatment of frostbite. Such methods have hoped to prevent gangrene by mechanical control of edema through use of plaster casts and pressure dressings. A study performed some years ago found some merit in the idea, but since the true pathogenesis of frostbite has been more clearly explained, the method of treatment has lost favor.

Another mechanical method of treatment of frostbite accepted as having merit is whirlpool therapy. It is generally agreed that sterile precaution techniques and delayed amputation are desirable in the treatment of frostbite. Sterile conditions are necessary to decrease the chance of infections, and delayed amputation is preferable because there is usually more viable tissue on the affected part than originally thought. The use of whirlpool therapy fulfills both of the above criteria. In water heated to 98.0 F (36.7 C) with pHisoHex® added, there is cleansing of the part plus sterile debridement leading to a quicker "natural amputation" if the tissue loss is inevitable. Surgery should then consist of removing only mummified tips distal to the line of demarcation. In most cases it is advisable that one should wait at least 60 to 90 days before surgery is attempted. Whirlpool therapy will aid to delineate the viable tissue much earlier.

Sterile techniques are imperative to decrease infection in frostbitten tissues since these tissues are a good growth medium for bacteria. The most common offending organisms found are *Staphylococcus aureus*, coagulase positive, *Pseudomonas aeruginosa*, and streptococcus. Some investigators feel that prophylaxis is indicated and recommend use of penicillin 250 milligrams three times a day for five days plus tetanus toxoid. Others believe that antibiotics should be used only when the skin is penetrated by injury or when positive cultures are present.

Amputation should be withheld until a true line of demarcation appears. More aggressive clinicians point out that limbs injured by frostbite are notorious for poor healing, and if a third degree injury can be determined soon after cold exposure, immediate amputation of the part may be indicated. However, this opinion is a minority one.

To summarize the treatment of severe cold injury, opinions in three excellent reviews are presented.

As soon as possible, the injured part should be thawed in water warmed to 107.6 F (42.0 C) to 111.2 F (44.0 C) for 20 minutes. Narcotics may be needed for pain initially, but should only be given if the patient is conscious and in good control of his

senses. After thawing, only aspirin should be given. No rubbing of the part is indicated as are no vasodilators, anticoagulants, dextran or heparin. After warming is completed, the part should be placed on sterile towels with sterile cotton balls placed between the patient's toes or fingers. If sympathectomy is elected it should be done within 24 hours. The skin can be cleansed by gentle rubbing with sterile cotton and pHisoHex®, but vesicles should not be opened.

It is important to remember that the ultimate success of therapy depends on no re-injury to the part. This means gentle handling and secondarily, the prevention of infection. It is important to keep the patient quiet as long as he has swelling present, and when infection is present wide spectrum antibiotics should be used.

When swelling has decreased, whirlpool bath treatments should be started at 98.0 F (36.7 C) for 20 minutes, utilizing pHisoHex® in the bath. No debriding of the wound should be done since the whirlpool will perform this task in a natural and efficient way. Stiff joints should be actively moved in the whirlpool. Gangrenous toes and fingers should be allowed to demarcate and mummify on their own. Often black eschars will form over fingers and toes simulating complete gangrene, but the whirlpool treatments will remove the eschar leaving pink and viable skin beneath in most cases. Amputation should be delayed for at least 60 to 90 days and then should be performed only after a definite line of demarcation has formed. The patient should be given the best of food, comfort and rest plus daily vitamins. With the best of care some patients may still die, even though they may appear to be doing well. The mechanism of death is sometimes bronchopneumonia, but in other cases the mechanism of death is obscure. Treatment should be conservative with minimal surgical interference, prevention of infection, a striving for functional joints, and a several month delay before amputation is contemplated.

Prevention

Since cold is a definite threat to man, an aspect of preventive medicine must be mentioned.

One of the most important aspects of guarding against cold injury is dressing intelligently to maintain body warmth—this includes the face, neck, and head as well as the rest of the body. Tight fitting garments should be avoided, and foot gear should guard the feet from getting wet. The diet should contain a considerable amount of carbohydrate and fat to increase the body's ability to produce heat. It is suggested that shoes and socks should fit snugly with no point tightness. Perspiration should be avoided; consequently, only clothing which al-

lows for good ventilation should be worn. Last but certainly not least is the fact that mittens should be worn instead of gloves in severe cold, and it is pointed out that in very severe cold the thumb should be with the rest of the fingers within the mittens and not inserted in the thumb groove.

Another aspect of guarding against cold injury is the idea of cold acclimatization. If one knows ahead of time that he is going to be exposed to severe cold, it has been shown that if the individual would spend five or six weeks becoming accustomed to the colder climate, he will be less susceptible to cold injury when he is forced into such exposure.

Summary

Frostbite is the actual freezing of tissues at temperatures often less than levels commonly associated with freezing. The injury sustained is not unlike that associated with burns, and the injury is designated as degrees of frostbite: first degree—hyperemia and edema; second degree—hyperemia with vesicle formation; third degree—necrosis of the skin and the subcutaneous tissues; and fourth degree—necrosis of the tissues with loss of the part. Another classification states that the injury is either superficial, involving only the skin and subcutaneous tissues, or deep, involving all of the tissues and even bone.

The pathogenesis of the frostbite injury has been studied extensively and there are two schools of thought which have evolved. One school states that the tissue injury is related to vascular injury. The mechanism includes spasm of the arterioles, arteriovenous fistulization, and arterial occlusion from thrombus formation. The second school of thought revolves about the idea that the tissue injury is due

to the direct action of cold on the tissues leading to ice crystal formation within the extracellular fluid increasing its osmolarity. Because of the increase in the osmolarity, the cells lose water and a pathologic concentration of intracellular constituents results. Most investigators agree that probably both mechanisms are involved in frostbite injury.

The treatment of frostbite has been debated for many years, and most investigators agree that the most practical and most rewarding treatment is quick rewarming of the frozen tissues in water warmed to 107.6 F (42.0 C). It has also been shown that after thawing is complete, sympathectomy increases the probability of saving the injured tissues if the procedure is carried out within 24 hours. Benadryl®, rutin and anticoagulants have also been shown to give beneficial results. Low molecular dextrans, corticosteroids, and mechanical methods for reducing edema have not been shown to be of value in treating frostbite.

The method of treatment should include rapid rewarming in sterile water warmed to 107.6 F (42.0 C), sympathectomy within 24 hours after the injury, sterile handling of the affected part at all times, and whirlpool treatments daily at 98.0 F (36.7 C). Amputation should be delayed for at least ninety days.

Prevention of cold injury has also been studied. Findings indicate that dressing so that body heat is maintained is the most basic requirement. It has also been pointed out, however, that if an individual knows in advance that he is to spend an extended period of time in a cold climate, cold acclimatization is of value.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 1300 Topeka Avenue, Topeka, Kansas 66612.

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Cancer Page

As you have noted, the Cancer Page has been absent from the JOURNAL in recent months. This has been due to the illness of the editor of the page. Arrangements have now been made for regular pages to resume.

Dr. Kermit Krantz, Professor of Obstetrics and Gynecology at the University of Kansas School of Medicine, has recently resumed chairmanship of a committee for a continuing study of female generative tract cancer deaths in Kansas. This study is being carried out with the cooperation of the Kansas Department of Health.

Coming Cancer Meetings of Importance

The annual Midwest Cancer Conference will be held April 10 and 11 at the Broadview Hotel in Wichita. This is a high quality meeting and many of you will want to mark your calendars and make your reservations now.

The tenth International Cancer Congress will convene in Houston, Texas, May 22 and extend through May 29. A full range of courses and discussions from fundamental research to latest treatment methods is being planned.

Your Medical Society, along with the generous cooperation of the Kansas Chapter of the American Cancer Society, is planning four, one-day practical chemotherapy seminars for early or mid-June. Two such seminars were held last year at Topeka and Hays. They were outstandingly successful. It is hoped that this project can continue to expand so that each area of the state will be covered every year or so.

—*The Committee for Control of Cancer*

Clinical Cardiology

Prosthetic Replacement of the Aortic Valve: A Current Assessment of Operative Results

ANDREW G. MORROW, M.D.,* *Bethesda, Maryland*

IN THE ADULT PATIENT with clinically significant aortic stenosis or aortic regurgitation, the aortic valve is always severely deformed, frequently lacking in substance, and usually the site of dense calcification. In the past, attempts were made to restore function to such valves by debridement, commissurotomy, or other reconstructive procedures, but experience has shown that these operations are ineffective in providing lasting benefit. Thus, when operative treatment becomes necessary in the adult with acquired aortic valve disease, it must be assumed that total replacement of the valve will be necessary.

The Starr-Edwards prosthesis has been most widely utilized for aortic valve replacement, and between February 1963 and September 1967 it was employed in 175 patients undergoing valve replacement at the National Heart Institute. The early and late results of operation in these patients are summarized in the present report.

The Patients

The 175 patients were 16 to 68 years of age (mean 47 years); 136 were men and 39 were women. All were distinctly symptomatic; 36 were in functional Class II (New York Heart Association Criteria), 123 in Class III, and 16 in Class IV. The patients in Class II were all severely limited by episodic angina pectoris or syncope, or both. On examination, the usual physical, roentgenographic, and electrocardiographic findings associated with aortic valve disease were present. All patients were studied preoperatively by cardiac catheterization and selective angiography. Pure or predominant aortic stenosis was present in 76 patients, pure or predominant aortic regurgitation in 59 patients, and in 40 patients stenosis and regurgitation were considered of similar severity. Thirteen patients had defective aortic prostheses of other types, and four had aneurysms of the ascending aorta which necessitated resection or aneurysmorrhaphy. Excluded from present consideration are other patients in whom aortic valve

replacement was accompanied by an operation on the mitral or tricuspid valve.

The aortic valve was exposed during total cardiopulmonary bypass conducted during mild (30 C) general hypothermia. The left coronary artery was perfused. The diseased valve and any residual calcific deposits in the annulus and septum were resected, and a prosthesis of suitable size inserted. The valves were those available at the time, and they had silastic poppets and bare metal struts and orifices (Models 1000 or 1200). In virtually all patients anticoagulation with warfarin was instituted in the early postoperative period and maintained thereafter.

The Results

Immediate Mortality: Twenty-four patients (14 per cent) died during the hospital admission at which valve replacement was performed. Nine patients died in the operating room, five as a result of technical problems related to placing the valve or closing the aorta; four other patients could never sustain an effective circulation after bypass, and one of them was found at necropsy to have severe and unrecognized mitral stenosis. Postoperatively, fatal hypotension and low output occurred in three patients, possibly because the prosthesis was too large for the aorta. Five patients died of uncontrollable ventricular arrhythmia, and three of renal failure. Cerebral hemorrhage, infected aortotomy, pulmonary consolidation, and endocarditis caused one death each.

Late Mortality: Thirty-eight of the original 175 patients (22 per cent) have died at intervals of three months to five years after operation. In ten patients death was sudden and unexpected, and no anatomic cause was apparent at necropsy. Ten other patients have died as the result of degeneration of the silastic ball. The remaining 18 patients died of various causes including left ventricular failure, arrhythmia, myocardial infarction, endocarditis, and hepatitis.

Thromboembolism: Since 1965, all patients with Starr-Edwards valves have been given therapeutic doses of warfarin unless a specific contraindication existed. Twenty-eight of the 113 surviving patients have had a total of 31 cerebral emboli with definite neurologic abnormalities. Twenty-five of the 28

* Chief, Clinic of Surgery, National Heart Institute, Bethesda, Maryland.

Prepared for the JOURNAL by the Kansas Heart Association.

patients recovered without detectable neurologic sequelae; in two patients mild residual abnormality persists, and in the other moderate weakness of the arm prevents employment. A number of other patients have described brief episodes of vertigo, paresthesia, or aphasia, but none has ever had a neurologic abnormality on examination. Two patients who died suddenly and unexpectedly were found at necropsy to have coronary artery emboli.

Eight patients have experienced bleeding as the result of warfarin administration, and two of them with intracranial bleeding (intracerebral or subdural) died.

Symptomatic Improvement: The 113 surviving patients have been followed for periods of one to five years (average 34 months), and detailed reassessments have been made in all. Eighty of the 113 survivors (71 per cent) are asymptomatic (Class I), while the remaining 32 experience symptoms only during unusual activity (Class II).

Hemodynamic Improvement: Postoperative cardiac catheterization has been performed in 100 patients at an average interval of seven months postoperatively. A systolic gradient across the prosthesis was usually evident, but the average value at peak systole was only 12 millimeters hemoglobin. The left ventricular end-diastolic pressure exceeded 15 millimeters hemoglobin in 66 patients preoperatively; it fell postoperatively in all but four of these, and the value was greater than 15 millimeters hemoglobin in only 15 patients postoperatively. The cardiac index was usually normal both before and after operation in patients with aortic stenosis. In two thirds of those with aortic regurgitation it was abnormally low preoperatively, and normal in all but three postoperatively.

Some Conclusions Concerning Aortic Valve Replacement

The immediate risk of aortic valve replacement is 10 to 15 per cent, and a significant number of survivors may be expected to die later of causes directly or indirectly related to the operation or the prosthetic valve. Thus, at this time operation should

only be recommended to distinctly symptomatic and severely incapacitated patients, those in whom the risk of early death without operation can reasonably be considered equal to or greater than that associated with valve replacement. Valve replacement is certainly to be avoided under all but extreme circumstances in the child or adolescent. The diagnosis of aortic stenosis or aortic regurgitation, or both, is readily apparent on clinical examinations, but information concerning the severity of the malformation can only be obtained by appropriate hemodynamic and angiographic studies. Such studies should be applied preoperatively in most patients, to provide assurance that symptoms are entirely or principally attributable to the defective valve, and that improvement can be expected after valve replacement. When severe stenosis or regurgitation is proved to be present in a severely symptomatic patient, operation is always recommended. Certain preoperative findings, such as prior myocardial infarction, probably indicate an increased operative risk, but at this time none constitutes an absolute contraindication to operation.

Patients who survive operation derive gratifying symptomatic improvement, and in most this is accompanied by a return of the intracardiac pressures to normal or near-normal values.

These attitudes and conclusions concerning aortic valve replacement are based almost entirely on relatively early experiences with Starr-Edwards prostheses. Early mortality can certainly be reduced by more exact intraoperative and postoperative management, and almost two-thirds of the early deaths in this series could now be avoided. Also, valves used since September 1967 have metallic poppets, which should be indestructible, and fabric covering of the orifice and struts should eliminate or greatly reduce the incidence of systemic embolization. With these valves permanent anticoagulation is presently considered unnecessary. When there is sound evidence that modifications of the operation and the prosthesis have reduced the risk of late death or disability, valve replacement can then be recommended to patients early in the course of their disease.

CHANGES OF ADDRESS

Members of the Kansas Medical Society will receive the JOURNAL and correspondence from the Executive Office promptly only if correct addresses are on file. Report changes to Kansas Medical Society, 1300 Topeka Avenue, Topeka, Kansas 66612.

The President's Message

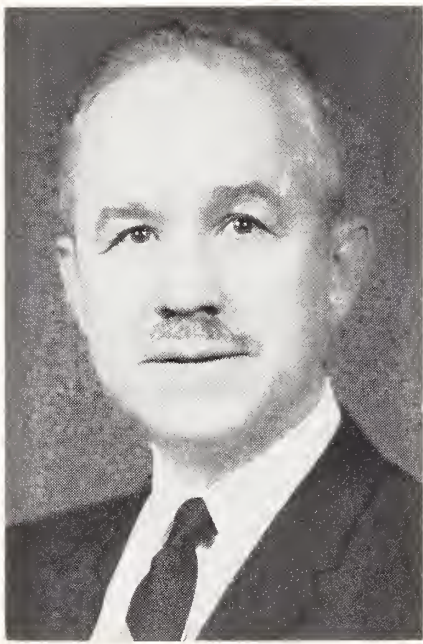
AMA Clinical Convention

The AMA Clinical Convention in Denver produced few exciting developments. Once again in the various group discussions and reports it was evident that Kansas was well ahead of most of the country in so many matters medical. Dr. Collins found that our Utilization Review Committees were much better organized and operated than any reported upon.

At a meeting of the Council on Medical Education to which we were invited, I was surprised to find so many physician dropouts employed by this committee. Practicing physicians made up about one fifth of the audience.

Most of the discussion period was taken up with matters that are not problems in Kansas. Colorado was setting up central libraries and Arizona was starting a continuing education program. In both of these areas Kansas has good programs that are getting better. However, at the end of the period we had one very significant problem that was not adequately discussed. Dr. Schenken of Omaha was most upset at the Council for removing the approval of residency training at the Children's Hospital in Omaha. He said that this hospital had trained most of the pediatricians in Nebraska. I didn't get a chance to tell him that the solution was easy. Get sufficient money to hire one third of the local pediatricians as Children's Mercy did in Kansas City.

This further underlines the problem discussed in my November page. Much of the physician shortage is iatrogenic. Physician employees of the AMA are the large force in requiring so many



full time men for approval of intern and residency programs.

I'm certainly not pointing the finger at them. Most of us who have practiced 30 years or more are looking for a way to take it easier. The salaries, with the short hours and no overhead, look mighty attractive. But as each new one leaves practice, the load piles up on the rest and the vicious cycle continues.

There would be no physician shortage in the United States were it not for the one third not in practice.

LELAND SPEER, M.D., *President*



Title XIX in Kansas

L. R. PYLE, M.D.,* Topeka

The primary principle of the operation of Title XIX in Kansas is—the patient is to receive the maximum return in health care for each dollar expended. The State Department of Social Welfare is not going to provide health services. They are only going to pay the bills of providers who furnish health services to those persons who qualify under the aegis of the Title XIX program in Kansas, and in accordance with federal and state laws and the rules and regulations of the State Department of Social Welfare, subject to limitations of the budget as authorized by the state legislature.

One of the prime necessities to carry out the primary principle of Title XIX is utilization review. Utilization review is an orderly review and analysis of services rendered to a welfare recipient to determine if those services were essential and that the charges for those services were indeed reasonable. Utilization review is not a punitive procedure. It can be compared to the cost analysis survey carried out by all successful businesses in the conduct of their operation. The first step in utilization review is carried out by the primary physician. It is he who takes the history and examines the patient. It is he who orders laboratory and x-ray procedures, prescribes drugs or admits the patient to the hospital. If he is able to justify the medical necessity for each of these services, he is conducting utilization review of the highest order. Thus, the primary physician determines the proper level of care that a patient requires in order to obtain the maximum benefit from his health dollar. According to law, the necessity of services rendered, or the level of care ordered and the charges for these services is subject to peer re-

view, regardless of where the services were rendered. Peer review is carried out by local or regional review committees. If the primary physician can properly document the need for the services rendered, there will seldom be a denial of payment for those services. The judgments of the local utilization review committees are subject to an analysis or review by the Professional Utilization Review Panel of the fiscal agent—Blue Cross-Blue Shield—on a sampling basis. Again if the necessary information is properly documented, few rejections will be made. An occasional case may be referred to a super review committee to be established by the State Department of Social Welfare. The purpose of this committee is anticipated to be more in the line of establishing policy and guidelines than in the denial of benefits.

To date, utilization review in Kansas has been developed mainly in the general hospitals. In some localities, utilization review in extended care facilities and skilled nursing homes is working quite efficiently. Over all, the function of these committees can be improved. Guidelines for professional review are being developed by the Utilization Review Study Committee of the Kansas Medical Society, chaired by Dr. Francis Collins. These guidelines should be ready for distribution during 1970.

The success of all medical programs, regardless of the source of payment—be it the federal government, an insurance carrier or the private resources of the patient himself, is dependent upon utilization review.

There has been some confusion among the members of the medical profession concerning the recent revisions of the Rules and Regulations of the State Department of Social Welfare. This revision does not alter greatly the rules and regulations which have been in effect since the inception of the Title

* Coordinator of Medical Services, State Department of Social Welfare.

XIX program. They do however, clarify the intent of the previous regulations and establish policy in certain areas where a distinct statement of policy is essential for the proper operation of the program. The following provisions in the revised Rules and Regulations need to be emphasized.

1. The State Department of Social Welfare assumes payment liability for those medical services that are essential to the health and welfare of medic-aid recipients, or as stipulated by federal and state laws, on the basis of usual, customary or reasonable charges as determined by the individual practitioner and concurred in by local, regional and state review committees, subject to range maximums established by Blue Cross and Blue Shield and budgetary limitations as authorized by the state legislature. If the legislature fails to appropriate adequate funds to provide payment in full on the basis of the usual, customary, or reasonable concept, payments for such services will be discounted or prorated on a formula and at a date determined by the Department of Social Welfare. Under federal law, hospitals cannot be prorated. The rules and regulations that have been developed in the management of Title XVIII (Part B-Medicare), shall apply across the board to Title XIX.

2. An intensified effort will be made to acquaint Title XIX recipients with the essential elements of

the health services. To facilitate this effort, identification cards for 1970 will be back printed with about 25 lines where a provider or his secretary is to date and sign for the services provided. When all of these lines are filled, the recipient must obtain a new card from his social worker. Thus, those recipients who over use or provider "hop" may be identified. You are requested to aid us in this endeavor by signing the identification card.

3. In the medical assistance only category the formula for determining eligibility has been changed, reducing the liability of payment for services to a maximum of 59 days prior to the date of application instead of the previous 119 days.

4. Payment in the general hospital at the usual daily rate is limited to the number of days that the patient requires acute hospital care as determined by the Utilization Review Committee. Prolonged detention following the date that acute hospital care is no longer necessary will be paid at the customary rate of the level of care that the patient requires.

It is not the intent of the State Department of Social Welfare to interfere with the orderly process of essential medical care to eligible recipients. Your cooperation as a provider or as a member of one of the varying review committees will play an important part in progressive development and efficient maintenance of a successful Title XIX in Kansas.

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KANSAS MEDICAL SOCIETY

111th Annual Meeting, May 3-6, 1970

Broadview Hotel, Wichita

SUNDAY—MAY 3

1:00 p.m. EXHIBITS OPEN—REGISTRATION

2:30 p.m. FIRST SESSION, HOUSE OF DELEGATES

MONDAY—MAY 4

8:00 a.m. REFERENCE COMMITTEES

10:30 a.m. SPORTS DAY

GOLFING—Wichita State Course
(old Crestview County Club)

SHOOTING—Planned for afternoon

BOWLING—Planned for afternoon

6:30 p.m. SPORTSMAN'S SOCIAL—Surprise Entertainment—Don't Miss It!

7:30 p.m. SPORTSMAN'S BANQUET

DORIS BUSS COMBO—Music and Dancing

CROWN PLAYERS—MeloDrama—Olio—Skits

TUESDAY—MAY 5

7:00 a.m. SPECIALTY SOCIETIES' BREAKFASTS

9:00 a.m. SCIENTIFIC PROGRAM—MEDICAL EDUCATION

GENERAL LUNCHEON

5:30 p.m. KU ALUMNI SOCIAL

7:00 p.m. PRESIDENT'S BANQUET

Program: ANN LANDERS—MEDICINE'S FRIEND

WEDNESDAY—MAY 6

9:00 a.m. SECOND SESSION, HOUSE OF DELEGATES

Mail the pre-registration form below to the Kansas Medical Society, 1300 Topeka Avenue, Topeka, Kansas 66612. Checks should be made payable to the Kansas Medical Society.

Please reserve tickets for me for the following events:

MONDAY, MAY 4, 1970

(Sports Day)

Wives and those not participating in the sports activities are invited to attend the Sportsman's Social and Banquet.

No. of
Tickets

——Sportsman . . . \$20 each (includes sports fees)

——Tickets for others attending Sportsman's Social and Banquet . . . \$10 each

TUESDAY, MAY 5, 1970

——General Luncheon . . . \$2 each

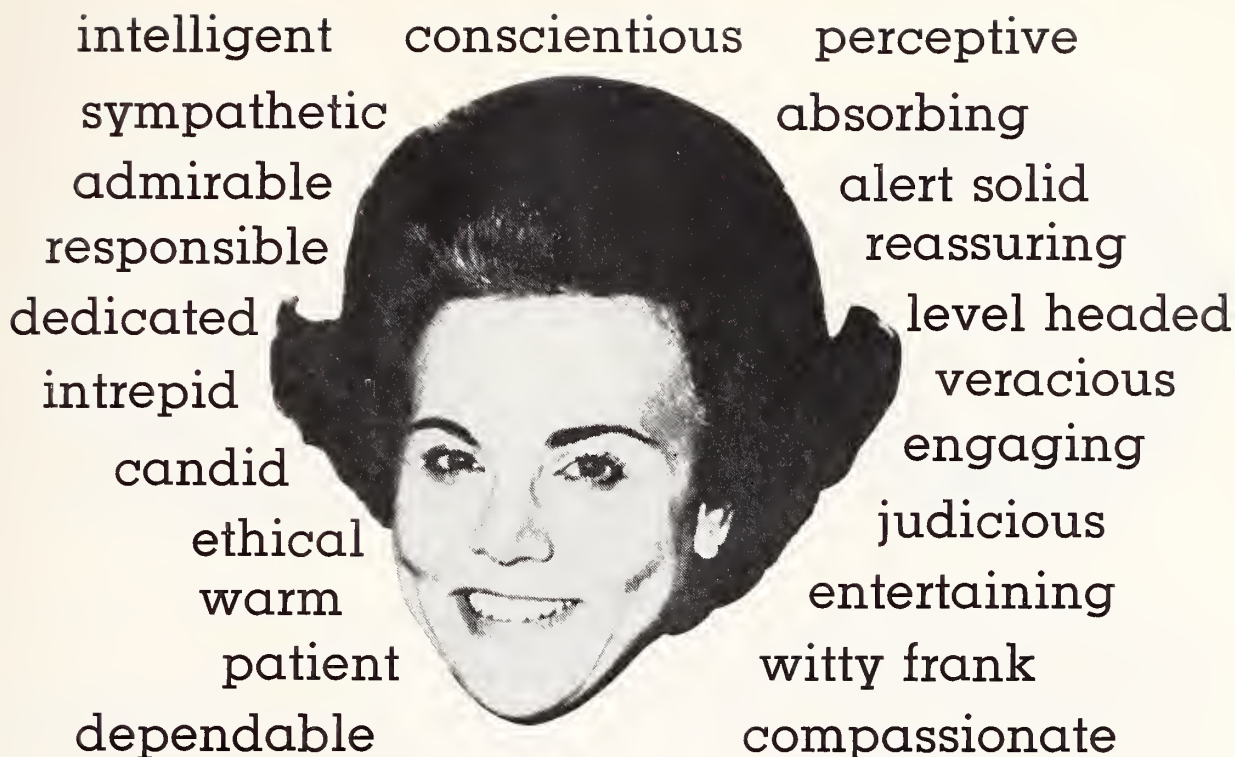
——President's Banquet . . . \$10 each

My check in the amount of \$. is enclosed.

Name:

Address:

.



ANN LANDERS

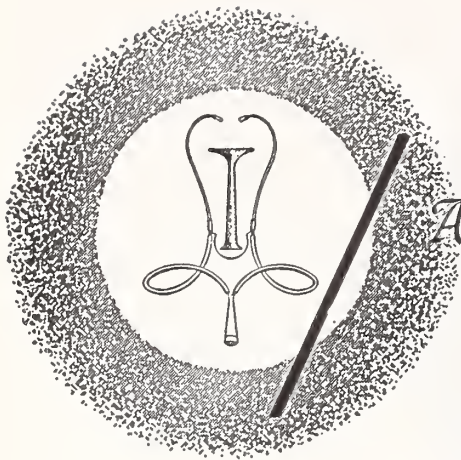
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Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the DOCTOR'S CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

Applications are now being accepted for the E. V. Allen Memorial Scholarships, open to junior and senior medical students attending medical schools in the United States or Canada. The scholarship provides three months of cardiovascular study at the Mayo Clinic, Rochester, as well as \$1,000 award.

Deadline for applications is April 1, 1970. Applicants will be notified by May 1, 1970.

Brochures may be obtained by writing to Minnesota Heart Association, 4701 West 77th Street, Edina, Minnesota 55435.

FEBRUARY

- Feb. 2-4 Sectional meeting, American College of Surgeons, Portland Hilton, Portland, Oregon.
- Feb. 16 Workshop on Diabetes Detection, Sheraton-Dallas Hotel, Dallas, Texas. The workshop will discuss the planning and conducting of diabetes detection programs at the community level, and is sponsored by the Disease Detection Information Bureau of Chicago.
- Feb. 16-18 Annual meeting, American Academy of Allergy, Jung Hotel, New Orleans, Louisiana. For information write the Academy, 756 N. Milwaukee, Milwaukee, Wisconsin 53202.
- Feb. 16-18 Sectional meeting, American College of Surgeons, St. Paul Hilton, St. Paul, Minnesota.
- Feb. 25-Mar. 1 Annual session, American College of Cardiology, Rivergate Center, New Orleans, Louisiana. Write: William D. Nelligan, Exec. Dir., 9650 Rockville Pike, Bethesda, Maryland 20014.

POSTGRADUATE EDUCATION

University of Kansas:

- Feb. 9-10 *Cardiac Auscultation*
- Feb. 25 *The Handicapped Child (Great Bend)*

Mar. 16-18 *Pediatrics*

Mar. 23-25 *Surgery*

For further information write the Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas 66103.

University of Colorado:

- Feb. 2-6 *High Risk Infant Care (limited)*
- Feb. 17-20 *Surgery of the Hand*

For further information write the Office of Postgraduate Medical Education, University of Colorado School of Medicine, 4200 East 9th Ave., Denver 80220.

University of Nebraska:

- Feb. 9-11 *Cardiopulmonary Resuscitation*
- Feb. 20-22 *Clinical Otorhinolaryngology*
- Mar. 5-6 *Advances in Hematology*
- Mar. 19-20 *Obstetrics and Gynecology*
- Mar. 30-31 *Psychiatry in General Practice*

For further information write: Department of Postgraduate Education, University of Nebraska Medical Center, 42nd and Dewey Avenue, Omaha 68105.

University of Iowa:

- Feb. 10-13 *Refresher Course for General Practitioners*

For further information write Director of Postgraduate Education, University of Iowa College of Medicine, 100 Westlawn, Iowa City 52240.

- Feb. 14-15 Two-day postgraduate course in connection with annual meeting of American Academy of Allergy, Jung Hotel, New Orleans. Topics to be discussed: *Pulmonary Diseases and Asthma; Developments in Medicine Relating to Allergy; Clinical Immunology; and Organ Transplantation.* For additional information write the Academy, 756 N. Milwaukee, Milwaukee, Wisconsin 53202.



Blue Shield

(Editor's Note: This month's Blue Shield article presents excerpts from a Professional Relations staff member's speech at a recent Blue Shield District IX Professional Relations Conference.

While the theme of the article deals with such topics as audit and fraud, it approaches them in a positive and constructive manner which is reflective of Blue Cross and Blue Shield's confidence in Kansas doctors and hospitals.

The article also stresses Blue Cross and Blue Shield's awareness of a need for more simplified claims filing procedures in an era where doctors' offices are faced with an avalanche of paper work. Possibilities of how simplified claims filing and processing could work "down the road" are discussed, and, while they won't be put into effect tomorrow, they remain as possibilities.)

One of the reasons for a carefully developed auditing program is to document what Blue Shield believes to be true: that with a few exceptions, providers are not intentionally billing us incorrectly. However, in order of importance I would not rank this reason first in the purposes of an auditing program.

In fact, my ranking for reasons to audit is as follows:

1. To simplify claims processing.
2. To document integrity (the reason above).
3. To reduce temptation. (You know, Oscar Wilde said he could resist everything but temptation.)
4. To catch a thief.

I hope that you were surprised to find simplification of claims processing as the first reason for an audit program.

This is, in fact the main theme of this paper.

The reason I think fraud is a minor consideration is not because I don't think there are some crooks in

the world, even among providers, but because crooks usually catch themselves. If a man is going to cheat, sooner or later he cheats too much—otherwise it wouldn't be worthwhile. Over a period of 20 years in Kansas, only one hospital and about six doctors have actually been caught at it.

An effective program of prevention would have cost at least \$50 to \$100 thousand a year, or for 20 years, somewhere between one and two million bucks.

And I doubt if we were taken for that much during that period of time—that is, on the basis of fraud alone. Now errors are something else. But one thing to remember about errors—they go both ways if they are honest.

So much for fraud prevention as a purpose for audits. Let's go on to more positive things.

Remember, we do have some built-in protections: the 1099, the EOB and general costs analyses, the random spot audits.

My thesis is that the real purpose of audits is to simplify claims processing.

In other words, you have to have a good audit program to sell a simplified claims system—even to yourself.

Both Blue Cross and Blue Shield, not to mention Medicare and Title XIX, input far more detail than we could ever use or will ever use. Hospitals put all kinds of detail on our claim forms—amounts of room and ancillary charges—x-rays, drugs, lab, EKG, etc.

On doctors' claims we input everything from drainage of a furuncle to a laminectomy—type service and all the rest. Every item input means that many more blips on the tape and that many more digits to keypunch. Even if some of us more advanced types are moving into optical scanning, inputting takes coding, coding takes trained personnel, trained personnel cost money if you want to keep them.

And after you get it all into the computer, you have to pay like the devil to get it out.

Who can tell you how many onychias or paronychias we paid in 1968. But who will ever find out or even care when he does?

Visualize this situation. The average hospital bill in Kansas is about \$400. Why not let hospitals write their own checks against Blue Cross for any bill under, say \$500? On the draft, they report the subscriber's name and number and the number of days he used. If the subscriber turns out not to be an eligible subscriber, the hospital is on the hook. But plastic ID cards could reduce this hazard.

Visualize allowing the participating physician to draw a draft against us for any amount under \$200. He would tell us the subscriber's name and number and check the type of service—office, home or hospital. That's it.

Of course, to set up a program of this kind you would have to eliminate a lot of little quirks from your contracts—such as not covering a particular type of wart. What I'm trying to say here—and it's been said by many before me—is that the time has come to get the esoterics out of this health financing business. In the final analysis we are all talking about a relatively simple thing—that is, drawing money out of the subscriber's pocket in monthly installments to prevent him from having to draw it all out at one time when he needs some service.

We need to eliminate most of our little peculiarities, because when all the little peculiarities are added together and programmed into a massive system involving thousands of providers and millions of people, we end up spending more to administer them than it would cost to pay for them without further ado.

I realize that this is being a bit cavalier with some of our pet theories, but out here in this Arizona climate in a meeting that is designed to challenge our imaginations we have license to exaggerate, and we are not required to prove our own theories.

What I hope for is a simple program with virtually all "No, No's" eliminated. I would see straight coinsurance plans that would pay 80 per cent of whatever was billed by a licensed provider—physicians, private rooms, TV and all. A maximum co-payment by the subscriber could be built in, such as \$100 or \$200.

Now here is how audits enter the picture as a way of selling this new, simplified approach. Let's go back to our four basic reasons for audits:

1. To simplify claims processing.
2. To document the integrity of the system.
3. To reduce temptation.
4. To catch a thief.

Auditing would have to be done after the fact—on a sampling basis—scientific means you audit those whom you have reason to suspect.

First, let's take hospitals:

You have available a number of items on which to base a good guess as to what is going on:

1. You have last year's financial audit showing average charges, costs, number of Blue Cross days to total days, income and expense by departments, etc.
2. You have patterns of use and charges of other hospitals of similar size and character.
3. You have the patient who gets a copy of his bill from the hospital. If he pays 20 per cent of the bill he may check it more carefully for accuracy.
4. You have the fact that the hospital is a reliable business enterprise and is not likely to be an intentional violator.

But the patterns of experience are your best guides to indications for intensive audits. I recall back in 1950 when we had less sophisticated equipment and were thus able to get regular reports from the "tabulating department." We got a monthly report showing the average charges being made for different ancillaries by each hospital. For several months we noted that a particular hospital was going up rather dramatically on lab charges per day and was decreasing on x-ray. Lab was a Blue Cross benefit and x-ray wasn't.

We sent our auditing firm down one Monday morning to check the books. Sure enough, they found that the hospital was putting x-ray in as lab in order to give the subscribers better coverage. (Dishonest as this was, the hospital knew better than we did what subscribers really wanted—full coverage.)

This suggests that there are enough facts available to get a fix on any given hospital, at least to the extent of indicating the need for an intensive audit.

Then let whatever sample is used be the basis for a complete check:

Books, records, doctors' orders, nurses' notes, ledgers, subscriber statement and all.

While these intensive federal case-type audits might be carried out rather sparingly on the basis of definite indicators, a more superficial, completely random audit could be done on the other hospitals, that is on the ones that appear normal by the indicators. Meanwhile, back at the home office, Kansas Blue Cross would have paid out about \$40 million in benefits while having intensively checked less than a million of it.

By asking the hospital to report details only on cases above \$500 or \$1,000, we get less paper and

less facts to process and can do a more intensive job of reviewing the larger bills—not only in terms of charge, but as to medical necessity.

Next we should look at audits of physicians' services and verification of charging practices.

What are the major questions:

1. Did the physician do the service he reported, that is:
 - a. Did he even see the patient? We've heard of cases (not in *Kansas*, of course) where patients were in Europe but were being billed regularly. One doctor billed for a dead man for six months.
 - b. Did he do as complicated a procedure as he reported?
2. Did he charge his customary fee? That is, the fee he charged others?
3. Does he claim a number of unusual cases which are not so unusual?

Computer profiles could be developed even on the services under \$200 for which no procedure codes are reported. For example, Doctor X has the following profile during a six-month period:

60 Blue Shield subscribers served. Total bill: \$6,100.00.

This breaks down as follows:

37 minor surgical services	\$ 425.00
18 major surgeries	4,650.00
15 in-hospital medical admissions	
for 150 days @ \$5.00	750.00
20 other services	375.00

Your studies would show that this is a reasonable profit which falls within the normal range. Each element tested is reasonable. Therefore, you would not need to check this particular physician, since his activities are quite similar to that of other physicians with similar practices. I have not shown as complete a breakdown of the indicators as you could develop on the computer. The computer could select those doctors who in one element or another exceeded established norms by some percentage. These would be the professionals who would be selected for special audits.

Part of the agreement with participating physicians would provide for audits in the doctor's office. This would be the "quid pro quo" for the \$200 draft-simplified claims form privilege.

A doctor subject to review would be subject to the most intensive audits. Not only would his ledger cards on Blue Shield patients be checked, but after our auditors noted the procedure performed, other patients having the same service would be checked

to validate the fact that his charges were the same for other patients.

An adequate sample of his patients would be asked if they received the services reported.

A cross check of hospital records would be made on the patients hospitalized.

The exhaustive nature of these audits will have been publicized to the profession—not by Blue Shield—but by the State Medical Society. The rationale would be that this approach is the profession's method of documenting that there are checks and protections to prevent any physician from taking unfair advantage of the simplified system.

Of course a few could probably cheat without getting caught. But it is not likely that the losses would be as great as the amount we are now spending to secure codes and input the mass of data we now get. Many on the borderline will be frightened off just like us taxpayers are because of the IRS system—or reputed system.

I have not tried to work out a careful methodology in this presentation, but simply to sketch in an idea. Obviously there are many problems that will have to be solved. I am suggesting that the use of the computer is in its early dawn. In the mass of health services for the millions we will have to streamline the operation—otherwise we shall all be buried under our own paper forms. We have reached the point now where we know that just about every ethical service must be included in the spectrum of benefits. It is no longer so important to know exactly what amounts are paid for the bits and pieces. But of course the system must have integrity.

There must be a conviction that it is on the up and up. That is where rigorous *ex post facto* audits would come in—to win public confidence—to say to all—the public and the providers—:

"It won't pay anyone to cheat, because if he cheats enough he'll catch himself."

Thus in a one-line summary I am suggesting that the primary reason for creating an audit program is to simplify the system in the age of explosions, which includes not only the population explosion, but the health care explosion.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

Stuart C. Averill, M.D.
Boys Industrial School
Topeka, Kansas 66608

Edwin L. Petrik, M.D.
Santa Fe Hospital
Topeka, Kansas 66607



Book REVIEWS

THERAPEUTIC RADIOLOGY—RATIONAL, TECHNIQUE, RESULTS (3rd edition) by William T. Moss and William N. Brand. C. V. Mosby Company, St. Louis, 1969. 564 pages illustrated. \$22.50.

The somewhat expanded new version of this book firms its position as the best exposition of the specialty of therapeutic radiology in the English language. Unencumbered by extensive details of radiotherapeutic technique (this portion of the title is perhaps misleading), the third edition again presents a rational foundation for, and clear assessment of, the current role of radiation therapy updated by new information and improved understanding.

Radiotherapy is one of the fastest growing specialties, due in no small part to the leadership of physicians like William Moss in whom the specialty has found perhaps its most articulate advocate.

Though the reviewer may have some few differences of opinion with the authors on specific points, there is nothing of consequence to fault in this work. It is practical, honest, and easily read with profit by any physician who deals with cancer patients whether he knows anything about radiation or not. One can only wish more non-radiologists would read it.

The appearance of Dr. Moss' associate, William Brand, as junior author in this third edition has not changed the style or philosophy of the presentation. Moss remains among the most readable of medical writers.

The organization, illustrations, lists of carefully selected references at chapter ends, and high quality

of production and binding lend to the utility of the volume for ready reference.

In addition to its great value for the resident and practitioner in radiology, I believe every physician who cares for patients with cancer needs to read this book.—J.W.T.

THE CLINICAL APPROACH TO THE PATIENT by William L. Morgan, Jr. and George L. Engel. W. B. Saunders Company, Philadelphia, 1969. 314 pages illustrated. \$9.75.

This is a textbook directed primarily to the beginning medical student. The authors, William L. Morgan, Jr., M.D., Professor of Medicine at the University of Rochester School of Medicine and Dentistry, and George L. Engel, M.D., Professor of Psychiatry and Professor of Medicine at the same university have done a commendable job at instructing the student *how* to take a history, *how* to do a physical examination, and *how* to properly summarize their findings and proposed subsequent evaluation and treatment.

The book is unique in that it does not merely discuss physical diagnosis and abnormal findings but rather is a "how to" book. The art of medicine is stressed throughout the text.

Although this text is primarily for the medical student almost any clinician could benefit from it. Sharpening of clinical skills is a dividend to be anticipated from this well-written, easily readable book. In this era of ever-multiplying laboratory and x-ray studies, it is well to be reminded that the hub of the wheel in medicine is still the clinical skill of the attending physician.—P.A.N.



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- Bauer, W. W. Potions, remedies and old wives' tales. Garden City, New York, Doubleday, 1969.
- Conference on Multiple Laboratory Screening: Systems and Interpretations, University of Minnesota, 1968. Multiple laboratory screening. New York, Academic, 1969.
- Curran, Charles E. Contraception; authority and dissent. New York, Herder and Herder, 1969.
- Dohrenwend, Bruce P. Social status and psychological disorder; a causal inquiry. New York, Wiley-Interscience, 1969.
- Farberow, Norman L. Bibliography on suicide and suicide prevention, 1897-1957, 1958-1967. Chevy Chase, Md., National Institute of Mental Health; 1969.
- Gralnick, Alexander. The psychiatric hospital as a therapeutic instrument; collected papers of High Point Hospital. New York, Brunner/Mazel, 1969.
- Hardin, Garrett James. Population, evolution, and birth control; a collage of controversial ideas. 2d ed. San Francisco, Freeman, 1969.
- Hokanson, Jack E. The physiological bases of motivation. New York, Wiley, 1969.
- Holubár, Josef. The sense of time; an electrophysiological study of its mechanisms in man. Cambridge, Mass., M.I.T. Press, 1969.
- Indian Hemp Drugs Commission. Marijuana; report of the Indian Hemp Drugs Commission, 1893-1894. Silver Spring, Md., Thos. Jefferson Pub. Co., 1969.
- Kilbourne, Edwin D. Human ecology and public health. 4th ed. New York, Macmillan, 1969.
- McGibony, John Robert. Principles of hospital administration. 2d ed. New York, Putnam, 1969.
- Marks, Isaac Meyer. Fears and phobias. New York, Academic Press, 1969.
- Mettler, Lawrence E. Population genetics and evolution. Englewood Cliffs, N. J., Prentice-Hall, 1969.
- Muehrcke, Robert Carl. Acute renal failure; diagnosis and management. St. Louis, Mosby, 1969.
- Pearson, Leonard. Death and dying; current issues in the treatment of the dying person. Cleveland, Press of Case Western Reserve University, 1969.
- Postgate, John. Microbes and man. Baltimore, Penguin Books, 1969.
- Practical treatment in psychiatry. Oxford, Edinburgh, Blackwell Scientific, 1969.
- Slater, Eliot. Clinical psychiatry. 3d ed. Baltimore, Williams and Wilkins, 1969.
- Suicide among the American Indians; two workshops, Aberdeen, South Dakota, September 1967 and Lewistown, Montana, November 1967. U. S. Govt. Print. Off., Washington, D. C., 1969.
- Thayer, William Sydney. Osler and other papers. Freeport, New York, Books for Libraries Press, 1931.
- Thomas Hunt Morgan Centennial Symposium, Lexington, Ky., 1966. Genetics & developmental biology. Lexington, Univ. of Kentucky Press, 1969.

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CHARLES H. FAIN, M.D.

Dr. Charles H. Fain, 89, died November 27, 1969, in Mt. Carmel Hospital, Pittsburg. He had been in medical practice in Pittsburg for 51 years.

Dr. Fain was born in Fayetteville, Arkansas, on January 24, 1880. He became a registered pharmacist in 1904, working in that profession until 1908 when he entered Baylor University School of Medicine. After receiving his medical degree in 1912, he entered general practice in Cunningham, Kansas, later moving to Pratt. He moved to Pittsburg in 1918 and continued practice there until his recent retirement.

Surviving Dr. Fain are his wife and a daughter.

WILLIAM R. PALMER, M.D.

Dr. William R. Palmer died October 16, 1969, at the Moline Rest Home in Lawrence. He was 94 years old.

He was born August 9, 1875, on a farm near Fall River, Kansas. After graduating from the University of Kansas Medical School in 1910, he entered general practice in Glasco. In 1935, he moved to Lawrence and continued his general practice until his retirement in 1965.

Dr. Palmer is survived by a son.

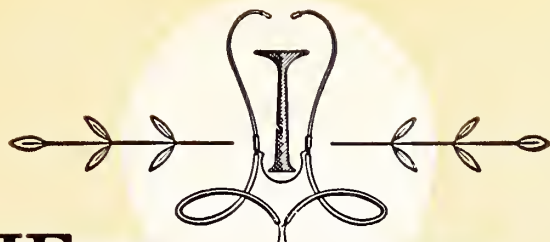
JOHN E. SWEENEY, M.D.

Dr. John E. Sweeney, 46, Topeka, died on November 15, 1969, after suffering a heart attack while on a hunting trip near Wamego.

Dr. Sweeney was born April 20, 1923, in Chicago. He was graduated from the medical school at Johns Hopkins University in 1947, and had been a doctor of internal medicine in Topeka for sixteen years.

Survivors include his wife, three sons and two daughters.

Memorial contributions may be made to the Capper Foundation for Crippled Children, Topeka.

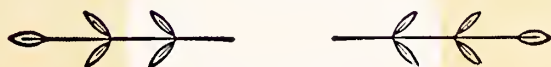


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and jitteriness. In contrast, CNS depression has been reported. In a few epileptics an increase in convulsive episodes has been reported. Sympathomimetic cardiovascular effects reported include ones such as tachycardia, precordial pain, arrhythmia, palpitation, and increased blood pressure. One published report described T-wave changes in the ECG of a healthy young male after ingestion of diethylpropion hydrochloride; this was on isolated experience, which has not been reported by others. Allergic phenomena reported include such conditions as rash, urticaria, ecchymosis, and erythema. Gastrointestinal effects such as diarrhea, constipation, nausea, vomiting, and abdominal discomfort have been reported. Specific reports on the hematopoietic system include two each of bone marrow depression, agranulocytosis, and leukopenia. A variety of miscellaneous adverse reactions have been reported by physicians. These include complaints such as dry mouth, headache, dyspnea, menstrual upset, hair loss, muscle pain, decreased libido, dysuria, and polyuria.

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Pacemakers

Experience With Epicardial and Transvenous Pacemakers

HELEN STARKE, M.D., MARVIN DUNN, M.D., and
DAVID PUGH, M.D., *Kansas City, Kansas**

Introduction

THE INTRODUCTION OF an intrinsically powered electronic pacemaker by Chardack in 1960 provided a new dimension in the treatment of heart block. Since that time, it has become the treatment of choice in the management of symptomatic heart block.¹ Modifications of the equipment have minimized technical failures, and a variety of designs (fixed rate, demand, and atrial synchronized models) have provided more appropriate management for the individual patient. The permanently implanted transvenous pacemaker is a valuable addition to this therapeutic armamentarium because it avoids the morbidity and mortality associated with thoracotomy and general anesthesia, and permits rapid rehabilitation and shorter hospitalization. This report describes the experience with implanted cardiac pacemakers in 94 patients managed at the University of Kansas Medical Center and compares the results of permanent transvenous endocardial pacemakers with epicardial pacemakers.

Material and Methods

The 94 patients included in this report had permanent pacemakers implanted between October 1962 and October 1968. The transthoracic method was used exclusively until April 1967. Subsequently both methods have been employed.

* From the University of Kansas Medical Center, Department of Medicine, Cardiovascular Section, Kansas City, Kansas.

Supported in part by NIH Grant 5 TO2 HE00269-20.

PATIENT POPULATION

Patient population is shown in *Table 1*. Patients

Ninety-four patients with symptomatic heart block (Stokes-Adams syndrome or cardiac failure) were managed with permanently implanted pacemakers. Fifty-five had implantation of epicardial electrodes and 39 had transvenous endocardial electrodes. The transvenous method avoided the hazards of thoracotomy and general anesthesia, but technical pacemaker failure was more likely to occur with this technique. Complications unique to the transvenous method were myocardial perforation in 10 per cent, migration of the electrodes in 18 per cent and pulmonary embolization in 8 per cent. Twenty-three per cent of patients initially managed by the endocardial pacing subsequently required implantation of epicardial leads.

with digitalis intoxication or acute myocardial infarction were excluded from this study.

PROCEDURE

Nearly all patients had a temporary transvenous pacemaker inserted initially. During this period of temporary pacing the method of permanent pacing

TABLE 1

	TYPE OF PACEMAKER	
	<i>Epicardial</i>	<i>Transvenous</i>
Number of patients	55	39
Male	33	23
Female	22	16
Age range of patients (years)	6 to 86	54 to 92
Mean age of patients (years)	67.3	76.9
Percentage of patients over 70 years	45%	80%
Chief indication for pace- maker		
Syncope	91%	85%
Congestive heart failure .	9%	15%
Heart failure present	31%	47%

was determined and heart failure was treated. *Table 2* indicates the type of pacemaker employed.

FOLLOW-UP

Ninety-nine per cent of the patients have been followed. Each patient was seen at frequent intervals by his private physician and was encouraged to check his pulse rate daily. Each was seen in the Cardiovascular Outpatient Clinic at the University of Kansas Medical Center at least every six months and had an electrocardiogram recorded at each visit. The power packs were changed electively after 24 to 30 months of use. *Table 3* summarizes this data.

FAILURE TO PACE

Failure to maintain successful pacing resulted from component failure or technical failures. Component failure included malfunction of the battery, electrodes, or circuitry. Technical failure indicated adequate component performance; however, satisfactory pacing was not achieved due to myocardial perforation, dislodgement of an electrode, etc.

Results

OTHER COMPLICATIONS AND DEATHS

The results are all summarized in *Tables 4* and *5*. Non-fatal complications following epicardial pacemaker implantation included one occurrence of each of the following: pneumonitis, ventricular fibrillation, septicemia, pulmonary embolization, localized infection with failure to pace, and syncope caused by diathermy interference with demand type pacemaker.

Pacing without complications indicated that the patients were adequately paced and free from syn- copal attacks. It included patients who required a

TABLE 2

	<i>Epicardial</i>	<i>Transvenous</i>
General Electric Fixed Rate . . .	8	0
Medtronic Fixed Rate	39	32
Medtronic Demand Type	7	7
Cordis Atricor	1	0

power pack change. Correction of heart failure was achieved in all but one patient in each group.

Discussion

During the early years of this study the only means of permanent pacing was by use of epicardial pace- maker.⁵⁻⁷ Wire breakage was a common problem un- til 1965 when improvement in materials and de- sign virtually eliminated this complication.

When transvenous pacemakers became available, they seemed advantageous because thoracotomy and general anesthesia were not required and the pa- tient could be ambulated immediately and released from the hospital sooner.⁸⁻¹¹ However, there has been a significant number of pacing failures due to migration of electrodes or cardiac perforation. This required repositioning of the electrodes or implanta- tion of an epicardial pacemaker. Perforation of the ventricle was recognized by irregular pacing, failure to pace, pericardial friction rub, diaphragmatic or chest wall stimulation, or pacemaker knocks and

TABLE 3
FOLLOW-UP AND PACING FAILURES

	<i>Epicardial</i>	<i>Transvenous</i>
Number of patients	55	39
Mean Follow-up (months)	27.2	8.8
Patients pacing more than 1 year	35	8
Component failure		
Battery failure	12 (22%)	4 (10%)
Months post implant (mean)	20	19
Wire fracture	14 (26%)*	0
Technical failure		
Myocardial perforation	0	4 (10%)
Electrode migration . .	0	7 (18%)
Inadequate stimulus . .	6 (11%)	0

* This has not been a problem in patients having surgery after 1965.

TABLE 4
FATAL COMPLICATIONS OF PACEMAKER
TREATMENT

<i>Cause of Death</i>	<i>Epicardial</i>	<i>Transvenous</i>
Pulmonary embolization		3 (0.3, 2, 12) *
Sudden unexpected ^{2, 3}	2 (6, 43)	
Pulmonary edema	2 (.03, 57)	
Uremia	1 (48)	1 (3)
Septicemia		1 (4)
Myocardial infarction	1 (0.3)	
Total deaths/Patients	6/55	5/39

* Numbers in parenthesis indicate survival in months following pacemaker implantation.

clicks and was confirmed by radiographic demonstration of abnormal electrode position. The four patients with this complication underwent thoracotomy for removal of the transvenous pacemaker and a permanent epicardial pacemaker was implanted. This complication occurred soon after electrode placement, and was noted 5 days, 27 days, 30 days, and 5 months after the initial pacemaker implantation.

Migration of the electrodes from the endocardium of the right ventricular apex resulted in pacemaker failure or erratic pacing. This occurred 12 times in seven patients.⁸⁻¹³ The electrodes were found in the inferior vena cava on one occasion, in the right atrium on one occasion and within the right ventricular cavity in the others. Repositioning of the electrodes was accomplished successfully seven times, but in five patients epicardial pacemaker implantation was necessary.

In spite of the difficulties and complications associated with artificial pacing, the overall mortality rate for paced patients is less than for those medically treated. In Friedberg's series of patients with heart block and Stokes-Adams syndrome who were medically treated, the mortality at one year was 50 per cent.¹⁴ In a similar group of patients in the present study the mortality was 13 per cent after an average of 8.8 months of transvenous pacing and 11 per cent after an average of 27.2 months of epicardial pacing. In general, the patients selected for transvenous permanent pacemakers were older, had a higher incidence of cardiac failure, and were considered poor operative risks for thoracotomy.

Acknowledgement

We wish to acknowledge our appreciation to Drs. William Reed, Alan Thal, and Donald Miller who

TABLE 5
SUMMARY OF OVERALL RESULTS

	<i>Epicardial</i> PER CENT	<i>Transvenous</i> PER CENT
Pacing without complications	67	60
Reoperation needed but successfully paced and alive	22	23
Alive and pacing	89	83
Died (with or without pacemaker complications)	11	13
No follow-up		3

performed the operations on the patients included in this study.

References

1. Chardack, W. M., Gage, A. A., and Greatbatch, W.: Transistorized, self-contained implantable pacemaker for the long-term correction of complete heart block. *Surg.* 48:643, 1960.
2. Lichter, I., Borrie, J., and Miller, W. M.: Radio-frequency hazards with cardiac pacemakers. *Brit. Med. J.* 1:1513, 1965.
3. Dressler, W.: Observations in patients with implanted pacemaker. *Amer. Ht. J.* 68:19, 1961.
4. Cardiac pacing and cardioversion. Symposium presented by the Amer. College of Cardiology, N. Y. 1967. Charles Press.
5. Zoll, P. M., Frank, H. A., Zarsky, L. R., Linenthal, A. J., and Belgard, A. H.: Long term electric stimulation of the heart for Stokes-Adams disease. *Ann. Surg.* 154:330, 1961.
6. Kantrowitz, A., Cohen, R., Raillard, H., Schmidt, J., and Feldman, D. S.: Treatment of complete heart block with an implanted controllable pacemaker. *Surg. Gynec. Obstet.* 115:415, 1962.
7. Chardack, W. M.: A myocardial electrode for long term pacing. *Ann. N. Y. Acad. Sci.* 111:893, 1964.
8. Siddons, A. H., and Davies, J. G.: New techniques for internal pacing. *Lancet* 2:1204, 1963.
9. Lagergren, H., Johansson, L., Landegren, J., and Edhag, O.: One hundred cases of treatment of Stokes-Adams syndrome with permanent intravenous pacemaker. *J. Thorac. Cardiov. Surg.* 50:710, 1965.
10. Siddons, A. H. M.: Cardiac pacing: Results with three different techniques. *Ann. Roy. Coll. Surg. Eng.* 37:155, 1965.
11. Chardack, W. M., Grace, A. A., Federuco, A. J., Schmert, G., and Greatbatch, W.: Long term treatment of heart block. *Progr. Cardiov. Dis.* 9:105, 1966.
12. Morris, J. J., Jr., Whalen, R. E., McIntosh, H. D., Thompson, H. K., Brown, I. W., and Young, W. G.: Permanent ventricular pacemakers. *Circ.* 36:587, 10-1967.
13. Jensen, N. K., Schmidt, W. R., Garanello, J. J., Lynch, M. F., and Peterson, C. A.: Intercavitary cardiac pacing. *JAMA* 195:916, 1966.
14. Friedberg, C. K., Donoso, E., and Stein, W. G.: Non-surgical acquired heart block. *Ann. N. Y. Acad. Sci.* 111:835, 1964.

Lazy Susan Monitor

A Lazy Susan to Monitor Hourly Urine Output

IRA R. MORRISON, M.D., *Atchison*

THE CAREFUL PHYSICIAN must be aware of the hourly urinary output of his patient in shock. A monitoring device made to free the nurse from this hourly task is an electrically motivated Lazy Susan Urometer. Precise information may be gained by a glance at a series of hourly urine samples gathered with electrical clock accuracy. Without disturbing the samples the nurse may record her data at her leisure.

The device requires the use of an indwelling Foley catheter. The upper plastic discs carrying the 24 funnels and 24 medicine bottles remain stationary until activated to move hourly from one funnel to the next. To simplify description one photographic view (*Figure 1*) shows the unit in operation. The other (*Figure 2*) shows its construction.

An hourly urine output recording should be an easy task in any hospital, but in actual practice it is not.

Our unit requires an ordinary intravenous plastic tubing without the needle. A discarded I.V. tubing may be used. Its small bore allows a rapid flow of urine from the urinary bladder to the collecting funnels. The glass tip at the distal end of the I.V. tubing serves as the urine dropper into the funnels.

The move from funnel to funnel takes about two seconds. The two upper plastic discs are attached and move simultaneously on four ball bearings. Without the collecting bottles these discs are of light weight. They may be easily disengaged and lifted from the heavy lower base for cleaning under running water. The base disc carries the motor, timing switches, central rod and rotating pin. Rotation is regulated by a Tork time switch that can be set to move the funnels once every 15, 30 or 60 minutes. The hourly setting is most practical. Twelve ounce medicine bottles are adequate for collecting hourly

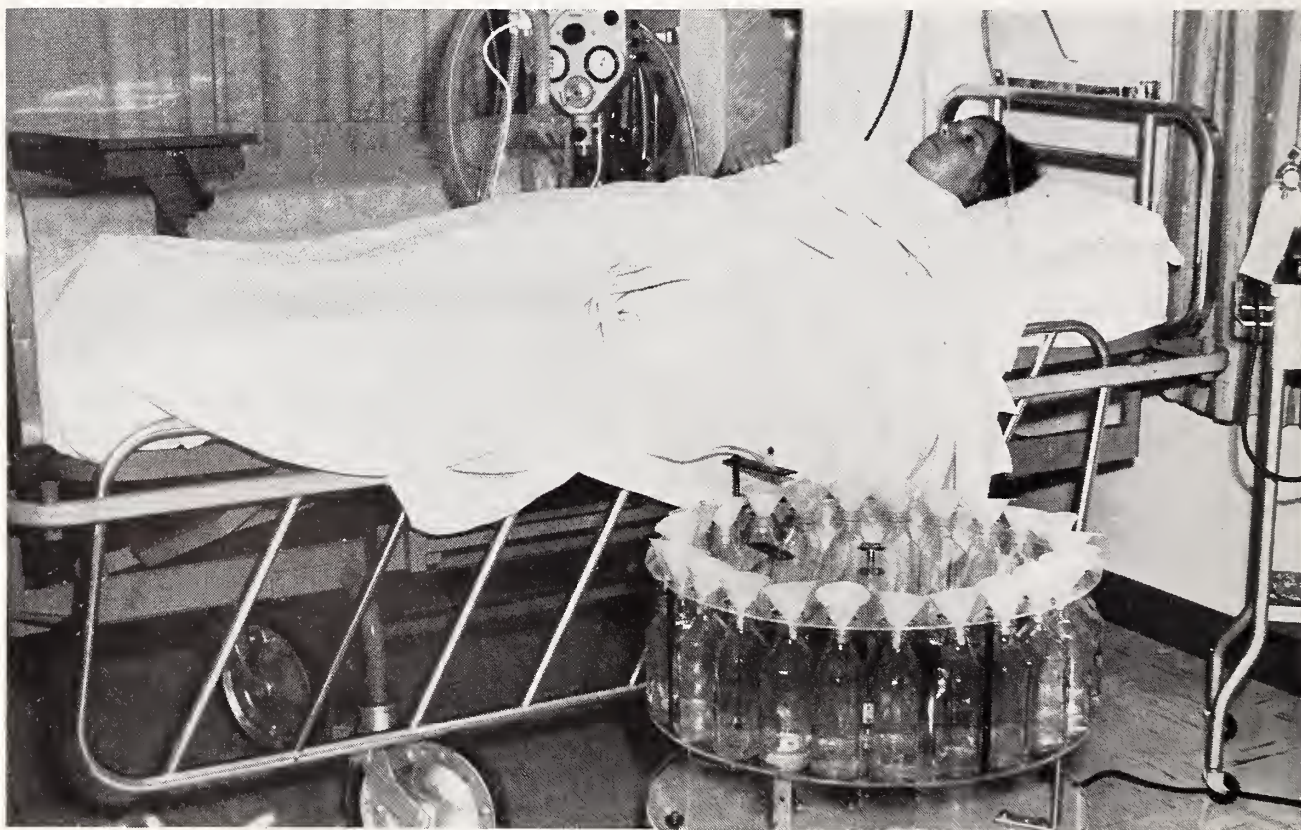


Figure 1. Lazy Susan Urometer in operation.

urine samples. The upper mobile discs may be allowed to rotate to any desired position by depressing the spring switch below the contact points. The responsibility of the nurse is to turn on the unit, check its operation and record the data.

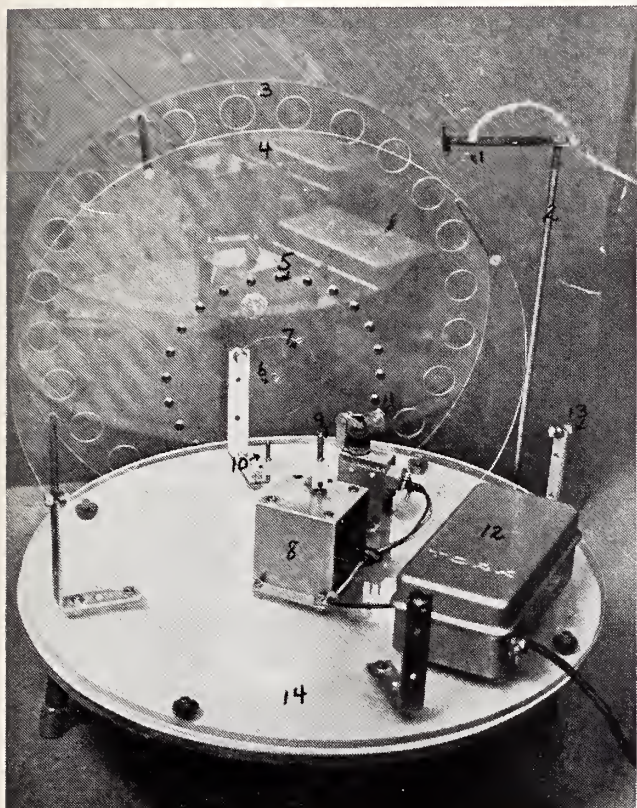


Figure 2. Lazy Susan Urometer—rotating discs removed to show construction. 1. Urine dropper (an IV glass tip), 2. urine dropper support rod, 3. funnel carrying disc, 4. bottle carrying disc, 5. one of 24 switch points, 6. central shaft bore hole, 7. rotating shaft bore hole, 8. motor casing, 9. central shaft, 10. rotating drive shaft, 11. switch wheel on spring shaft, 12. Tork switch casing, 13. ball bearing on bracket, 14. base mounting disc.

The Lazy Susan is no longer confined to the Intensive Care Unit. It helps to monitor the brittle diabetic or acetonuric patient. The onset and duration of response to insulin or hypoglycemic drugs are better evaluated if hourly tests for glucosuria are made. Mechanical monitoring of the urine keeps the nurses more alert to the patient's hourly changes.

This unit has been used with no replacement of parts in a small community hospital for three years. Its usefulness has gradually increased. Its merits lie in the fact that it allows the nurse more leisure time while affording more definite information to the physician.

Some Interesting Statistics

The AMA recently published another volume in its series of statistical studies. This publication, entitled "Selected Characteristics of the Physician Population, 1963 and 1967," contains information not previously available. It is a 300 page volume, almost exclusively made up of charts. It examines 36 different studies.

In summary, in 1963, 89.8 per cent of all physicians were involved in the direct care of patients. In 1967 this percentage had dropped to 89.3.

More doctors are being graduated now than in the earlier date. In 1963, there were 83 four-year medical schools with a total enrollment of 31,074 students. They graduated 7,265 physicians. Eighty-four, four-year medical schools had an enrollment of 33,068 and graduated 7,743 in 1967. In 1963, this was an average of 374 students per school and an average graduating class of 88. The average enrollment by 1967 was 394 and the graduating class 92. During this same period full time school faculty increased by 36.3 per cent.

This volume also listed the number of physicians engaged in the practice of each specialty. Some have increased by as much as 200 per cent. General practice has decreased by 6.2 per cent. One table lists the average age of all physicians. This remained constant at 46.0 years both in 1963 and 1967. Another table shows that non-federal physicians increased 10.3 per cent while federal physicians increased 25.7 per cent.

Of particular interest is a table that shows where physicians are practicing in relation to the state in which they received their education. In 1963, 44.2 per cent of all physicians were located in the state where they attended medical school. In 1967 this had dropped to 43.0. For Kansas, they list 2,426 physicians in 1963. Of these, 1,097 had graduated from the University of Kansas; 1,329 had graduated from schools outside Kansas. By 1967, they list a total for Kansas of 2,469 physicians; 1,146 had graduated from Kansas; 1,323 graduated elsewhere.

Another tabulation shows the physician to population ratio. In 1963 there were 135 physicians per 100,000 inhabitants. By 1967 it had risen to 145 per 100,000. Only two states showed a decrease between these two years. In only one state did the population increase at a faster rate than the physician population. In Kansas this ratio increased from 110 to 117 during this period. Twenty-one states appear to have a lower ratio of physicians to their population, the lowest being 82. A number of states are clustered near Kansas with figures close to 117. The highest is listed at 223.

(Continued on page 49)

A Breathing Room . . .

. . . *For the Patient With a Chronic Obstructive Lung Disease*

MAURICE R. CONNOLLY, M.D., *Salina*

THE CHRONIC OBSTRUCTIVE lung diseases, together with the acute asthmatic patients, have increased in number and importance in the Midwest in the past 15 years. Whether this is the pink puffer, the blue bloater, the person with bullous cysts, the burnt-out asthmatic or the fibrotic, there is one thing in common to all and that is decreased oxygen concentration in the arterial blood.

All of these patients are benefited by specially built breathing rooms. There are few of these around the country. There are none in Kansas. The architectural requirements of such a room so as to control heat, humidity, dust, pollens and barometric changes are simple to define but difficult to achieve. Spurred on by a typical patient in my family and having no proper hospital facilities available, I built such a breathing room in my home. Some of the requirements she needed follow:

FEELING OF EASE: The room should be large (15 by 18 feet) as the patient already feels shut-in. It should blend with the outside of the building and not appear "tacked on." It should run normally into the other rooms from a decorator's standpoint. It should have out-door light on at least three sides. Dust collectors, shaggy furniture and drapes are to be avoided. The walls should be panelled. Added conveniences are intercommunication system, television, radio, telephone, and so forth.

VAPOR BARRIER: Sheets of plastic should be incorporated into the walls to keep the moisture from leaking either way. In Kansas most of the year we need to keep the moisture in. In spring and fall, though, the damp Gulf air drops temperatures and raises the humidity and at this time we have to keep moisture out. Windows have to be of two-pane construction and well weather-stripped.

DOORS: Doors should be heavy and should swing in, except for the outside door which the law requires to swing out. Weather-stripping is difficult and the better kinds are expensive. It should be replaceable. Doorknobs should be levers and on the inclined plane principle. They should be similar to the big handles seen on the old fashioned grocery store ice box. Designs similar to those seen on pressured airplane cabins are excellent. Heat and cold should

be controlled in the room and for the room only and independent of the rest of the house. Many fine combination heaters and air conditioners are on the market. Don't forget to allow for overflow from the air conditioner. The room should be over-supplied so changes can be quick and adequate.

HUMIDITY: Most pulmonary patients have a narrow range of humidity tolerance. This is frequently between 30 and 40 per cent of saturation. The house as a whole acts as a store room of moisture, using the air conditioner dehumidifier in summer. An inexpensive small dehumidifier removes the excess moisture in cold weather, when the house air conditioner is off. Since dehumidifiers are tiny air coolers primarily, the temperature of the room may have to be raised towards 80°F in order to activate them. There are many good furnace humidifiers on the market. The gallons of water needed on windy days can frequently exceed fifty gallons. Removal of dust and pollens and hard fallout particles from the humidifier requires an efficient dust collector. An electrostatic dust collector installed in the house furnace-air conditioning unit has done an adequate job. Moist dusting is only necessary about twice a week.

PRESSURE DEVICES: Several times each year the barometric pressure drops rapidly causing a lowering of the partial pressure of oxygen. Several times each month, strong winds buffet the house forcing dust and dirt into the room. At these times a method of sustaining or increasing the barometric pressure is necessary. If the devices mentioned have been installed properly a simple fan similar to an attic exhaust fan will suffice. The added factors of noise and vibrations require good construction and engineering. Several devices are available to limit the rise of the pressure. There need be no fear of decompression sickness if the barometric pressure does not rise above 31 inches of Mercury. No attempt should be made to introduce hyperbaric O₂ as the physical and physiological dangers of this far outweigh any theoretical advantages. Now you are set to ignore the dew point of 52.

This same room also serves as a fine home treatment center for emphysema's first cousin, rheumatoid arthritis.

Clinical Cardiology

Prosthetic Replacement of the Mitral Valve: An Assessment of the Clinical and Hemodynamic Results of Operation

ANDREW G. MORROW, M.D.,* *Bethesda, Maryland*

THE STARR-EDWARDS PROSTHETIC mitral valve has provided the surgeon a means for correcting malformations of the mitral valve that are not otherwise amenable to operative treatment. These malformations may be generally classified as rheumatic mitral regurgitation and calcific mitral stenosis, although, rarely, valve replacement is required in a patient with congenital heart disease. In many other patients with pure or predominant mitral stenosis, the valve may retain reasonable mobility and remain free or nearly free of calcification. In such patients, who are usually young women in regular sinus rhythm, relief of obstruction can be achieved by digital or instrumental mitral commissurotomy, and this safe and simple closed operation should be applied whenever possible. In contrast, when a stenotic valve and the supporting subvalvular structures are heavily calcified and densely fibrotic, effective function can almost never be restored, even by debridement and commissurotomy under direct vision. In this clinic the results of reconstructive operations for mitral regurgitation have also been poor; moderate to severe regurgitation has recurred in virtually all patients after one to two years, even though the valve was competent in the early postoperative period.

The Starr-Edwards prosthesis has been utilized at the National Heart Institute since 1961, and has been inserted in more than 300 patients. Recently, the early and late results of operative treatment in 100 consecutive patients were reviewed, and these are summarized in the present report.

The Patients

The 100 patients all had acquired mitral valve disease, and two thirds gave a clear history of previous rheumatic fever. Fifty-three were female, 47 were male, and they ranged in age from 10 to 64 years; the mean age at operation was 38 years. All patients were distinctly symptomatic, and 34 were in Class IV (NYHA), 64 in Class III, and two in

Class II. Hospitalization for the treatment of congestive heart failure had been necessary on one or more occasions in 87 patients, and 38 had been hospitalized three or more times. Previous operations on the mitral valve had been performed in 35 patients.

The characteristic clinical, radiographic, and electrocardiographic findings of mitral stenosis, mitral regurgitation or a combined mitral valvular malformation were evident in each patient. In 36 patients signs of tricuspid regurgitation were also present, and 24 patients had physical evidence of aortic regurgitation, but of insufficient severity to necessitate aortic valve replacement. Calcification of the mitral valve was evident fluoroscopically in 63 patients.

All of the patients were studied by right and 95 by left heart catheterization preoperatively. On the basis of the preoperative hemodynamic and angiographic assessments and the operative findings, 50 patients were considered to have pure or predominant mitral stenosis, and 50 to have pure or predominant mitral regurgitation. In the entire group of 100 severe pulmonary hypertension (systolic ≥ 50 mm Hg) was present in 69 patients, and the average cardiac index was reduced to 2.1 L/min/M². Preoperatively, the left atrial mean pressure was abnormally elevated in 96 patients (average 22 mm Hg); a diastolic gradient across the valve was recorded in all patients with mitral stenosis and in 33 of those with mitral regurgitation.

The Operation

In most patients the operation was performed through a left lateral thoracotomy (with right ventricular cannulation for venous return), and in the remainder a median sternotomy or right thoracotomy was employed. Cardiopulmonary bypass was usually conducted at 37°C, but mild (30°C) general hypothermia was induced when aortic regurgitation necessitated numerous or prolonged periods of aortic occlusion. Ventricular fibrillation was induced in most patients by A.C. stimulation.

When the necessity of valve replacement had been determined, the valve was excised in conti-

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This article was furnished to the Journal by the Kansas Heart Association.

nuity with the chordae tendineae and papillary muscles. Residual calcific deposits in the annulus were removed with a rongeur, and the ventricle was lavaged. The prosthetic valves employed at the time were those supplied by the Edwards Laboratories, and all had bare metal orifices and struts and silastic poppets. Size 3M or 4M valves were inserted in 90 patients, while nine received 2M valves, and one a 5M. The valves were anchored by 15 to 20 interrupted sutures, each passed twice through the fixation ring of the prosthesis and the patient's valve ring. In 17 patients a left atrial thrombus was present, and was excised prior to valve replacement; in six of these calcification of the left atrial wall was evident preoperatively.

In the immediate postoperative period assisted ventilation was provided via the endotracheal tube for 12 to 24 hours, and in 34 patients longer periods of assistance required tracheostomy. Anticoagulation with warfarin was instituted 48 to 72 hours after operation.

The Results

Immediate Mortality: Seventeen (17%) of the 100 patients died during the hospital admission at which valve replacement was carried out. Two patients died in the operating room; one had uncontrolled bleeding from the atrium, and in the other effective cardiac contractions could not be restored after bypass. Eight patients died one to seven days after operation with progressive hypotension and signs of reduced cardiac output; all had normal or small left ventricular cavities. At necropsy it appeared that obstruction to left atrial outflow had been produced by incomplete descent of the prosthetic ball that, in turn, resulted from protrusion of the muscular ventricular septum into the cage. In five of the eight patients massive thrombosis of the valve and atrium had occurred. Two other patients died of acute myocardial infarction, one the result of a coronary arterial embolus. One patient died of cerebral embolism from air trapped in the atrial appendage, and another from infected pulmonary emboli which had been present preoperatively. The remaining three patients, all young women with mitral regurgitation, died one or two days postoperatively after evidencing cardiac failure and hypotension; no anatomic cause of death was evident at necropsy.

Late Mortality: Seven of the 83 patients who survived the immediate postoperative period have died 5 to 24 months later. Two had infectious endocarditis; in one patient the infection followed an intercurrent operation performed without the administration of antibiotics. One patient sustained a fatal cerebral embolus after her physician had

stopped warfarin administration for unknown reasons. Another patient had a subarachnoid hemorrhage as a result of warfarin overdosage. One patient died in heart failure after an unsuccessful attempt to close a peribasilar fistula. In the remaining two patients death was sudden and unexpected and the cause is unknown.

Thromboembolism and Anticoagulation: An attempt has been made to maintain all patients on therapeutic doses of warfarin, but this aspect of the patient's management has been under the control of the referring physicians. Nine patients have sustained definite cerebral emboli, and in two of these cerebral embolism occurred on two different occasions. As noted above, one of the patients with cerebral embolism, who was not receiving warfarin, died. Another has persistent flaccid hemiparesis and is severely incapacitated. Two patients have neurologic abnormalities on examination, but they are asymptomatic. The other five patients who had cerebral emboli have no detectable abnormal findings. Five additional patients have described transient vertigo, amnesia, or muscular weakness, but in them no neurologic abnormalities have ever been detected on any examination.

One patient died as the result of warfarin toxicity, and two others have had massive but nonfatal episodes of gastrointestinal bleeding.

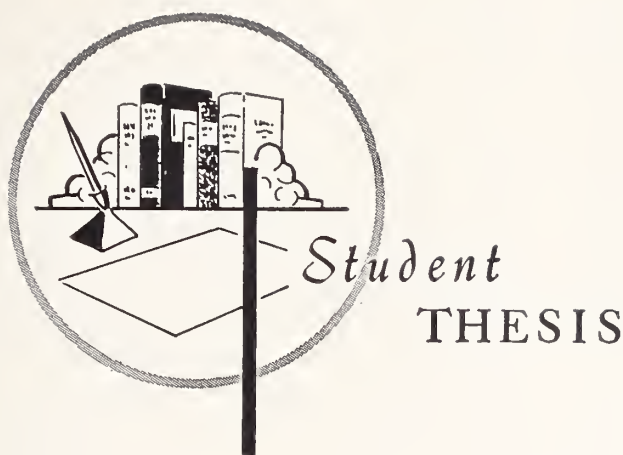
Clinical Status: The 76 surviving patients have been followed for intervals of two to six years. Forty-seven of them (62%) are asymptomatic (Class I), 26 are in functional Class II, and 3 are in Class III. Preoperatively, 52 of these 76 patients were in Class III, and 23 were in Class IV. Fifty-three patients (70%) are working full-time or, in the case of some women, managing their homes and families without unusual assistance. Sixty-nine patients (92%) are on unrestricted diets.

Postoperative Hemodynamic Assessments: The resting pulmonary arterial pressure was lower postoperatively in every patient in whom it was abnormally elevated before operation, and the systolic pressure was less than 50 mm Hg in 71 of 74 patients studied. The left atrial mean pressure was also reduced in every patient in whom it had been abnormal, but in 15 of 68 patients it still exceeded 12 mm Hg. The cardiac index was higher postoperatively in 63 of 67 patients, and the average postoperative value was normal, 2.9 L/min/M².

Some Conclusions Concerning Mitral Valve Replacement

The experience with mitral valve replacement in these and other patients allows certain conclusions concerning the present status of the operation, and

(Continued on page 49)



Pros and Cons of Oral Contraceptives

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Introduction

TODAY, ORAL CONTRACEPTIVES are among the most commonly prescribed drugs despite their relatively recent introduction and availability for general use. Of the \$2,837,610,000 in total ethical drug sales in 1967, \$66,733,000 was spent for oral contraceptive preparations. In 1968, it was estimated that more than six million women in the United States were using the Pill which reflects its simplicity, effectiveness, and inexpensiveness.

The continued popularity of oral contraceptives will undoubtedly depend on their ultimate safety. From the time of their inception, clinicians have worried about the possible harmful effects due to their general systemic rather than local action on genital organs. Physicians, who have observed thromboembolic phenomenon in users of the Pill, have been suspicious that this may be more than a coincidence. Thus, there has been and continues to be much criticism and controversy about oral contraceptives. A review of the adverse reactions of oral contraceptives is presented, thereby providing guidelines by which the physician can rationally prescribe these agents.

Systemic Effects

1. VASCULAR

Predisposing factors—In 1961, reports began to

appear in the literature suggesting a possible association between oral contraceptives and thromboembolism. Investigation of possible predisposing factors favoring thromboembolic disease have implicated the following: changes in the composition of blood, stasis, alteration of the endothelium, alterations of lipid and carbohydrate metabolism, and hypertension.

It has been demonstrated by many investigators that the estrogen component of oral contraceptives induces alterations of blood clotting factors. Most agree that increases in fibrinogen, factor VII, and fibrinolysin occur, but are in disagreement over changes in factors II, VIII, X, and others. Variations in dose and methods of analysis may account for these differences. Even with these documented changes, it is difficult to ascertain the net result on vascular thrombosis. Excess of clotting factors does not necessarily produce a hypercoagulable state. Furthermore, Drill points out that the incidence of thrombophlebitis is low in pregnancy, rising only postpartum when increased clotting factors are declining. Since many infer that taking oral contraceptives produces a pseudo-pregnant state, they reason that, as in pregnancy, the incidence of thrombophlebitis should be low. Opponents argue that every cycle on oral contraceptives is a pseudo-delivery, thus implying an association between oral contraceptives and thromboembolism.

Studies have revealed that stasis secondary to oral contraceptives might be an important factor predisposing to thrombosis. An increase in the distensibility of the vein wall and a decrease in the linear velocity of blood flow has been described in preg-

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Deer is serving his internship at Ben Taub General Hospital, Houston Texas.

nancy and in women on the Pill. A reduction in femoral venous blood flow has been demonstrated in dogs receiving oral contraceptives. Changes in the smooth muscle, reticulum, and elastica of arteries and veins have been described in rabbits who were pregnant or taking Enovid®.

Decreased glucose tolerance in women taking oral contraceptives has been observed. One investigator found that the decrease in glucose tolerance occurred in only those patients where mestranol was part of the product. The meaningfulness of this data assumes overwhelming proportions when one considers the association between diabetes and coronary thrombosis.

Lipid metabolism has assumed importance in explaining the pathogenesis of atherosclerosis. Furthermore, premenopausal women seem to have a partial immunity to atherosclerotic diseases in comparison to males. This has been partially attributed to differences in lipid metabolism. It is interesting to note that increases in levels of tryglycerides, cholesterol, and low density lipoproteins resembling postmenopausal levels has been observed in women receiving oral contraceptives.

A possible association between oral contraceptives and hypertension has recently been alluded to by Newton who described 11 patients. Six patients were normotensive prior to medication; augmentation of hypertension took place in two of five patients; and reversal or improvement took place in six of nine patients when medication was discontinued. Marked elevations of angiotensin with increased reactivity to renin was also demonstrated in these patients.

The predisposing factors listed above do not necessarily imply an association between oral contraceptives and thromboembolism. The determination of the net results of all factors combined is presently impossible. It does indeed appear that any association must be ascertained from clinical studies.

Thus, when it became increasingly apparent that there might be inherent danger from the use of oral contraceptives, an ad hoc committee was established by the Food and Drug Administration to study this problem. They concluded that "on the basis of available data . . . no significant increase in the risk of thromboembolic death from the use of Enovid® in this population group has been demonstrated." La-sagna criticized this report on the basis of inaccurate data and concluded that "the FDA, the Pill enthusiasts, and most physicians have since then acted as if the report, which is based on incomplete data of dubious quality inappropriately analyzed, actually proved for all time that there was no risk."

In 1966, the FDA published another report in which they concluded that "the data derived from

mortality statistics are not adequate to confirm or refute the role of oral contraceptives in thromboembolic disease." In other words, no progress had been made in ascertaining any relationship, although they did recommend a large retrospective study.

Since then, recent articles in the United States and Great Britain have appeared. These will be discussed in the following paragraphs.

Thrombophlebitis—Drill and Calhoun, from a review of the literature, presented incidence data on thrombophlebitis in a variety of conditions. The incidence figures listed are averages derived from a compilation of data.

	Cases Per 1,000 Women Per Year
Incidence of thrombophlebitis in nonpregnant women	
Based on hospital admissions91
Based on visits to the physician	2.2
	Cases Per 1,000 Deliveries
Incidence of postpartum thrombophlebitis	
European hospitals	10.4
United States hospitals	3.1
	Cases Per 1,000 Pregnancies Per Year
Incidence of antepartum thrombophlebitis74
	Cases Per 1,000 Women Per Year
Incidence of large scale studies of oral contraceptives55

Drill and Calhoun concluded that "from these results that the incidence of thrombophlebitis in female patients of childbearing age who are using oral contraceptives is less than that observed during pregnancy, an effect which is consistent with the known biological properties of these compounds."

Doll and Vessey, in a carefully planned retrospective study comparable to the one suggested by the ad hoc committee of the FDA, differ drastically in their conclusions. They estimate that the incidence of hospital admissions for patients with deep venous thrombosis is .05 cases per 1,000 women for non-users and .5 cases per 1,000 women for users of oral contraceptives.

The study by the Royal College of General Practitioners, which is based on the records of general

practitioners, found that there was a threefold increase in venous thrombosis and pulmonary embolism in users of the Pill. Their data included results of superficial thrombophlebitis which is thought to be the reason for the lower risk as compared to the other English studies.

Since publication, the studies by the American and English authors have been criticized and defended. Critics of Drill's article state that their study is derived largely from unpublished or incompletely published work which include a number of cases of superficial thrombophlebitis and cases in which predisposing conditions are present.

The critics of the British articles reply that their data was gathered from retrospective studies. Also, their studies do not indicate an enhanced reoccurrence of thromboembolism in patients with pre-existing thrombophlebitis who are users of the Pill. In addition, they emphatically point out that the risk of pulmonary embolism with predisposing conditions was not increased with users of oral contraceptives. Vessey states this assumption is not valid since the controls were healthy women and not women with predisposing conditions. The resolution of these arguments will undoubtedly depend on future studies.

Pulmonary embolism—Drill and Calhoun presented data indicating that oral contraceptives are not associated with an increase in deaths from pulmonary embolism.

	Cases Per 100,000 Women Per Year
Ad Hoc Committee:	
Users	1.21
Non-users84
Burket: non-users	1.13
Winter: users74

In their study, Inman and Vessey conclude that a cause and effect relationship does exist between oral contraceptives and pulmonary embolism. They calculate that two per cent of all deaths of women from 21 to 44 years of age die from pulmonary or cerebral thromboembolism which can be attributed to oral contraceptives. They estimate a relative risk of developing pulmonary embolism to be eight times normal in users of oral contraceptives. Vessey and Doll calculated an increased risk of twelve times.

Coronary Thrombosis—While Vessey and Doll report no significant correlation between oral contraceptives and coronary thrombosis, the data of Vessey and Inman indicates a possible association, especially

in young women of low parity. Their data is based on a small number of patients.

Cerebral Thrombosis and Neuro-ophthalmic Sequela—Although the data from the English authors is based on small numbers of patients, both indicate that a definite risk of cerebral thrombosis exists with the use of the Pill.

In support of these epidemiological studies are numerous case reports of young women who develop strokes while taking oral contraceptives. One of the most striking cases is that of a young woman who developed three episodes of cerebral artery insufficiency which were always associated with the use of oral contraceptives.

Salmon and his associates have recently reviewed the cases of neuro-ophthalmic problems in users of the Pill. Of 229 cases, 70 were classified as strokes, 135 as migraine, and 35 cases of miscellaneous side effects. Twenty-six per cent of the strokes occurred in the vertebral-basilar system. More than one half of the patients suffering major neurological sequela had a significant premonitory history. On this basis, they conclude that patients with a history of hypertension, vascular disease, migraine, facial paralysis, and endometriosis should be observed carefully while taking oral contraceptives. Furthermore, they state that the development of transient neurological symptoms in users necessitates their discontinuation.

2. HEPATIC FUNCTION

Unlike thromboembolism, the alteration of hepatic function secondary to oral contraceptives is accepted by most medical authorities. Abnormalities of liver function tests appear to be common. Increased bromsulphthalein (BSP) retention has been observed in up to 40 to 50 per cent of users while increased levels of transaminases and alkaline phosphatase are seen less commonly. However, BSP retention and other abnormalities may disappear even though the drug is continued.

Sufficient hepatic derangement necessary to produce jaundice has also been observed in users of oral contraceptives. The appearance of jaundice may occur from weeks to months after beginning the Pill. Although severe systemic symptoms are absent, the patient may complain of malaise, anorexia, nausea, and pruritus. In addition to elevated bilirubin levels, other laboratory abnormalities include increased transaminases and alkaline phosphatase. Liver biopsy shows bile stasis, a slight degree of hepatocellular degeneration and necrosis, and absent or minimal inflammatory reaction. Cessation of the drug will usually result in a remission. Interestingly, about one third of these women have a history of jaundice of pregnancy.

Although the incidence of this adverse effect is

low, the AMA Council on Drugs concluded "that the use of oral contraceptives is contraindicated in women with recurrent cholestasis of pregnancy, constitutional hyperbilirubinemia, and primary biliary cirrhosis" and "the decision to withdraw the medication should be based on the appearance of bile in the urine or the development of jaundice." Others extend the contraindications to include those women with evidence of acute or chronic disturbances of liver function and recommend withdrawal in women who develop abnormal function studies other than increased bromsulphthalein retention.

3. SKIN

Melasma, also known as chloasma, is a hyperpigmentation of the skin which is capable of producing cosmetic and emotional difficulties that may be incapacitating. A recent study in the United States calculated the incidence to be 29 per cent in users of the Pill with no significant difference between the combination or sequential type. In 87 per cent of the women who developed melasma, a history of meloderma during pregnancy was obtained. Furthermore, melasma does not necessarily regress after cessation of treatment. One study has implicated malnutrition as a predisposing factor, since Vitamin B₁₂ complex was effective in treating this symptom. Aggravation from sunlight is often observed and is supposedly due to an increase in dopa biosynthesis secondary to ultraviolet light radiation. The formation of dopa is an intermediate step in the biochemical production of melanin.

4. HEADACHE

It is difficult to be objective in an analysis of a subjective symptom. Goldzieher points out the numerous pitfalls in the analysis of subjective symptoms and concludes that "uncritical acceptance of clinical data has led to a largely meaningless 'battle of the side effects' in the current literature on anti-fertility agents." The symptoms of headache falls into this category and the incidence in users of the Pill varies from report to report. However, Grant presents evidence that the incidence of headaches in users is associated with well-developed arterioles in endometrial biopsy specimens. The survey by Morley does not support Grant's work. Nonetheless, it seems imperative that this be investigated further, since the excessive arteriolar development of the endometrium might correspond to cerebral vasculature. If oral contraceptives do produce excessive arteriolar development of the cerebral vasculature, this may be responsible for the neuro-ophthalmic sequela.

5. GASTROINTESTINAL EFFECTS

There is no doubt that the incidence of nausea and vomiting is increased during the first few cycles

when the patient is placed on oral contraceptives. But again, the variation in reported incidence depends on the preparation and the investigator. Data on the efficiency of changing products to decrease these symptoms is lacking. Most agree that gastrointestinal symptoms approach pre-treatment levels after three cycles.

6. WEIGHT GAIN

Because of the theoretical possibility of aldosterone-like effects of oral contraceptives, weight gain has long been attributed to the Pill. Although this data is influenced by many variables, available data fails to determine a significant trend in weight loss or weight gain. Regardless, one should consider the water retention effects in those patients with cardiovascular disease such as congestive heart failure.

7. CAERULOPLASMIN

Increased levels of serum copper and caeruloplasmin have been observed in women taking oral contraceptives. Often this will cause the plasma to be green. Since elevated levels have also been observed in pregnant women and in women using estrogens, the elevation in users of the Pill is thought to be due to the estrogen component. The significance is not known.

Endocrine Effects

1. THYROID

Increased levels of thyroxine-binding globulin are observed in pregnancy and estrogen administration. Therefore, it is expected that oral contraceptives will have a similar effect which is reflected in the increased levels of protein bound iodine (PBI) so frequently observed. In one study, the normal PBI ranged from 3.5 to 7.0 μ g per 100 ml in contrast to a mean PBI level of 7.5 and 8.0 μ g per 100 ml in pregnant women and users of Ovulen®, respectively. Unbound thyroxine levels are not changed.

2. PITUITARY AND HYPOTHALAMUS

It is postulated that combination and sequential products inhibit either luteinizing hormone or follicle stimulating hormone by action on the hypothalamus. Thus, ovulation is inhibited. No structural changes in the hypothalamus have been reported. However, as will be mentioned later, there is evidence that prolonged hypothalamic depression may be responsible for anovulation seen in women following cessation of therapy.

3. ADRENAL

Increased levels of bound cortisol are seen in users of the Pill due to estrogens increasing cortisol-binding globulin. Although the secretion rate is decreased, production of cortisol is normal. The adrenal response to ACTH is unaltered, but there is con-

flicting evidence from results of the metyrapone test which is a measure of ACTH secretion. One investigator found no change while another reports a significant impairment in the response to metyrapone during oral contraceptive therapy. Although increased secretion rates of aldosterone have been observed, the relationship to weight gain is obscure.

4. OVARIES

The ovaries in patients treated with the Pill resemble those of postmenopausal women. Although corpus lutea are absent, follicle growth and maturation has been observed. Fibrosis of the ovary is known to occur, but the significance is questionable. Whether fibrosis may be an important factor in post-treatment infertility, amenorrhea, and irregular menses is open to speculation.

Effects on Uterus and Breasts

1. CERVIX

Squamocolumnar epidermalization and microglandular hyperplasia of the endocervix is seen with pregnancy and oral contraceptive therapy. Taylor describes atypical endocervical hyperplasia in 13 patients on the Pill. These lesions resemble the microglandular hyperplasia and most likely represents the same changes. The significance of these lesions is that they not be mistaken for malignancy.

2. ENDOMETRIUM

Combination—The endometrium is underdeveloped, secretory changes are transient and minimal, and the stroma is edematous with some pseudo-decidual reaction. After cessation of therapy, return to normal is reported to take place.

Sequential—This form of therapy produces a well-developed proliferative stage and a late secretory stage. Since it most closely resembles the normal physiology, this type of therapy is reported to be advantageous.

3. MYOMETRIUM

Since it is known that fibroids increase in size during pregnancy presumably due to high levels of estrogen and progesterone, it is conceivable that oral contraceptives may likewise produce enlargement. However, there is no data that substantiates this theory.

4. MENSTRUAL CYCLE

With combination products, the cycles are more regular and withdrawal bleeding is of less duration and amount in contrast to sequential products. Both types of products relieve menstrual molimina and on occasion may be used primarily for this purpose.

Missed menses are unwelcome side effects due to the anxiety experienced by the patient that she may

be pregnant. The incidence varies according to the preparation and investigator. Thus, it is difficult to arrive at a definite conclusion as to which drug has the lowest incidence of absent menses.

Intermenstrual bleeding appears to depend on two factors. The unreliability of the patient in taking the tablets correlates closely with the incidence of breakthrough bleeding. However, the type of preparation influences, to a certain degree, this side effect. Again, it is difficult to form conclusions because of the wide variations of reported frequency.

The most important decision regarding irregular menses is whether it is pathologic—and therefore requiring a dilatation and curettage—or only secondary to the Pill.

5. BREASTS

Changes in the size of breasts has been reported but is not supported by controlled data.

Lactation may be inhibited or reduced with oral contraceptives. This effect is dependent on dose and time at which therapy is initiated postpartum. In a double blind study involving 451 women treated with Norinyl-1® starting one day postpartum, none had inhibition of lactation. Twelve per cent of those taking the Pill reported diminished lactation compared with 3 per cent of those using a placebo. This may be of significance in those countries where the majority of mothers breast-feed their babies.

Effects on Fertility

Initial results on the fertility rate following cessation of oral contraceptives have been interpreted as favorable. Conception rates ranging from 40 to 70 per cent have been observed in the first post-treatment cycle compared with 34 per cent after discontinuing mechanical contraception. However, it should be pointed out that statistics at three months post-treatment are lower than the results for those women using methods other than the Pill. Garcia and Pincus estimated the pregnancy rate to be 117 and 233 per 100 women years before and after treatment, respectively. The interpretation of these results is difficult since the number of women who practiced contraception before treatment was not stated.

Reports of women who have developed infertility, irregular menses, and amenorrhea following use of oral contraceptives indicate that initial conclusions may have been wrong. Whitelaw, in addition to reporting 24 cases with the above symptoms, alludes to the under-reporting that occurs. Dodek describes four cases of infertility following cessation of therapy and suggests that the mechanism may be prolonged dysfunction of the hypothalamic center. Three of

four patients responded to prednisone which was attributed to direct action on the hypothalamus.

In 1966, the "FDA Report on the Oral Contraceptive" stated that "there is no evidence that prolonged suppression of ovulation in nulliparas or multiparas will impair future fertility." Recent data indicates that this may not be true.

Effects on Menopause

It has been suggested that a delay in the menopause might occur after cessation of therapy and thereby leave the patient potentially fertile for a longer period of time. Since the physiology of the menopause is poorly understood, it is difficult to arrive at any conclusion. The answer to this question may be determined when the etiology of the menopause is understood. Otherwise, the answer will await those clinical studies based on women who have reached the menopause after prolonged therapy.

Effect on Mental Status

Glick, in a critical review of the literature, found that there was not enough evidence to make any conclusions regarding the behavioral effects of oral contraceptives. Although it was emphasized that controlled studies were needed to ascertain any relationship, no mention was made of the inherent bias involved in any such data.

Subsequently, Wallach pointed out the many factors involved in the determination of emotional response to the use of oral contraceptives. Basic factors include attitudes of husband and wife toward pregnancy, contraception, and sexuality. For example, the women who fears risk of pregnancy may experience a sense of well-being while the Catholic, for obvious reasons, may experience guilt feelings. In addition, the attitude of the patient is influenced by information obtained from many sources. The recent informative article, "Caution on the Pill," in *Saturday Review* demonstrates the fund of information available to the patient. No doubt the patient, who was optimistic concerning the Pill before reading this article, was a little unsure about her attitude after hearing of the controversy surrounding this therapy. Also, fear of subsequent fertility may influence the affect of the patient. Thus, it can be seen that any controlled study must take into account a number of seemingly unmeasurable variables. Therefore, this is all the more reason why therapy should be individualized.

Carcinogenesis

The potential carcinogenic effect of prolonged oral contraceptive therapy is a very debatable issue. Oral contraceptives have only been in use for about ten

years and the latent period of most human carcinogens is greater than a decade. Also there is no objective method of detecting ultimate carcinogenic potential during the latent period. Therefore, it may be premature to form any conclusions.

It is well known that many breast tumors in the premenopausal patient are estrogen dependent and that estrogen exerts an anti-tumor action in postmenopausal tumors. A few investigations, because of no demonstrable increase in the incidence of breast cancer, believe there is an actual "anticarcinogenic action of estrogen therapy." However, it has been pointed out that our past clinical experience deals almost exclusively with the use of estrogens in menopausal or postmenopausal women. Therefore, it is not logical to compare the past experience in these older patients with younger women, because of the difference in tumor response. Furthermore, Hertz points out the paucity of data on the incidence of malignancies of the breast and genital tract in women on prolonged therapy and concludes:

Our inadequate knowledge concerning the relationship of estrogen to cancer in the woman is comparable with what was known about the association between lung cancer and cigarette smoking before extensive epidemiological studies delineated this overwhelmingly significant statistical relationship.

The relationship of oral contraceptives to endometrial carcinoma is likewise obscure. Many believe this malignancy to be related to high levels of estrogens. It has been reported that progesterone will produce regression of metastatic endometrial carcinoma which confuses any interpretation. Since the response of the endometrium to the combination product is hypoplasia which is the opposite of what is seen in a precancerous state, it is postulated that oral contraceptives are more likely to prevent endometrial carcinoma. Supposedly, the likelihood of malignant potential is decreased since the endometrium returns to normal after cessation of therapy. But, as Hertz emphasized, the basal elements of the epithelium and stroma remain to give rise to all future elements. In the 1966 report by the FDA, the conclusion reached was that the paucity of data "do not permit drawing any conclusions relative to the effect, adverse or beneficial, of these contraceptive pills on endometrial malignancy."

Since the genesis of carcinoma of the cervix is estimated to be seven to ten years, the above considerations apply to the relationship of therapy to this malignancy. The FDA report of 1966 concluded that "there is no evidence to support the statement which has been made that the use of oral contraceptive pills may have a protective effect against the development of malignancy of the uterine cervix."

A variety of malignancies can be produced in animals with continuous large doses of estrogen-progestogen mixtures. Although it can be argued that these doses are too large to be applicable to humans, it is equally interesting that all known carcinogenic agents for man have been shown to be carcinogenic in animals.

The Risk of Pregnancy and Abortion

Proponents of oral contraceptives argue that even if there is a slight risk involved, the risk from pregnancy is far greater. They base their conclusions on present maternal mortality rates which range from 21 to 50 per 100,000 depending on age. However, they do not consider that a woman may be on oral contraceptives for most of her fertile life and that the average number of children are two to three in a family. If these factors are considered and if it is assumed that the studies by Inman are correct, then the perspective is entirely changed. Inman and Vessey concluded that "the risk of death from pulmonary embolism during one year's treatment with oral contraceptives is of the same order as the comparable risk of bearing one child."

Proponents also justify the use of the Pill, even if there is a small risk involved, on the basis of the number of criminal abortion deaths in the United States. They base their justification on two assumptions. First, it is thought that oral contraceptives, because they decrease the chance of an unwanted pregnancy, will decrease the incidence of criminal abortion. Although this is a valid assumption, it has not been proven. Then, it is estimated that there are 1,000,000 to 1,500,000 criminal abortions per year and 10,000 to 15,000 deaths as a result. Evidence that these figures may be grossly incorrect was brought out in a recent study in Minnesota. On the basis of the above estimations, Minnesota should have 100 to 200 criminal abortion deaths per year. However, their records indicate only one death annually.

Conclusion

It is indeed difficult to form any conclusions when most of the data is incomplete or in conflict. The relationship of thromboembolic disease to oral contraceptive must await future prospective and retrospective studies that are carefully controlled. The potential carcinogenic effects may not be delineated for years. Furthermore, there must be continued investigation of the effects of oral contraceptives on hypertension, on lipid and carbohydrate metabolism, on the pituitary and hypothalamus, on liver function, and on behavior.

In the meantime, it is difficult to provide any guidelines for prescribing these agents. The present data allows the zealous Catholic to condemn the Pill

and at the same time, the individual with a fervency for population control can speak for the Pill. But it is imperative that the physician, during every drug administration, weigh the therapeutic toxicity ratio and the prognosis of the disease he is treating. In the case of oral contraceptives, he is treating healthy women with potentially harmful drugs. Indeed, the margin between expected benefits and possible hazards is very close and difficult to determine.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 1300 Topeka Avenue, Topeka, Kansas 66612.

Clinical Cardiology

(Continued from page 42)

permits some predictions as to its future applicability. The immediate operative risk continues to approximate 10 per cent, and will probably not become significantly lower as long as the operation is reserved for severely ill patients, those in classes III and IV. The Starr-Edwards prosthesis is the subject of constant re-evaluation and improvement, and as the long-term reliability of the valve improves operation reasonably can and should be recommended to patients earlier in the course of their disease. The incidence of death and disabling complications in the late postoperative period has thus far been distinctly lower than in patients with prosthetic aortic valves. Arterial emboli have occurred in about one fifth of patients, in spite of attempt to maintain effective anticoagulation with warfarin, but significant sequelae of the emboli have been absent or inconsequential except in two patients. Improved prostheses can be expected to eliminate or greatly reduce the incidence of thromboembolism. Of greatest importance is the fact that surviving patients have experienced striking and sometimes dramatic symptomatic improvement, and almost all have been able to return to useful and productive lives and to carry on their increased activities without significant discomfort. The postoperative hemodynamic studies have shown that symptomatic improvement is paralleled by a return of the cardiac output and intracardiac pressures to normal or near-normal levels.

Interesting Statistics

(Continued from page 39)

This is only a partial review of a large amount of material available. Anyone interested in information of this type may obtain a copy of the publication by writing the Department of Survey Research of the American Medical Association.

Cancer Page

A 67-year-old male consulted his family physician because of a right inguinal hernia. The hernia was asymptomatic and had appeared spontaneously about four weeks previously. The patient had been in excellent health and a routine physical checkup nine months earlier had been satisfactory. There had been no evidence of hernia at that time.

After verifying the presence of the right inguinal hernia, the physician advised the patient that surgery would be necessary and that a repeat physical examination was in order. Although the patient initially denied any other symptoms, on close questioning he did recall that he had been becoming increasingly constipated for the past two or three months and that he had been needing to use laxatives more often.

The physician proceeded with a complete examination and except for the hernia, the general condition of the patient was good. Digital rectal examination was negative; however, sigmoidoscopic examination revealed an annular obstructing carcinoma in the distal sigmoid.

The patient was hospitalized and a left hemicolectomy performed. The hernia was repaired at the same time. An uneventful recovery occurred and the patient remains alive and well two years later.

Comment

The initial onset of an inguinal hernia in a patient in the older age group must always arouse suspicion of colonic cancer. In such a patient complete investigation is indicated.

—*The Committee for Control of Cancer*

The President's Message

TITLE XIX FEE PRORATION

The Council met on Sunday, January 18. The principal subject for discussion was Title XIX (Medicaid) with particular reference to the 25 per cent proration ordered by the Board of Social Welfare.

We discussed the type of answer we should give to the public or even whether we should say anything at all. The Council voted to present a statement, and one that had tentatively been prepared was discussed and modified by consensus of those present.

We gave this statement to the press. Dr. McClure, Dr. Collins and I then met with several members of the newspaper, radio and T.V. Our approach was—the physicians did not want this program but when it became law, we worked valiantly to help develop a good program. The vast majority of our members have cooperated in every way.

Then, mainly because Welfare certified 110,000 recipients rather than the budgeted 89,000, the program was underfinanced by several million dollars. *Time* magazine stated that the principal cause for Medicaid's financial problems was the great rise in physicians' and hospitals' costs. The press in general seems to have this impression. The gentlemen we talked to were somewhat surprised to find that physicians' fees were frozen December 31, 1968, as well as the 25 per cent reduction this month.

We as physicians should emphasize and re-emphasize—in Medicaid, physicians' fees have gone down while hospital fees have risen unchecked—if we can only disassociate our modest rise in fees in the last ten years (37.6%) from that of hospital costs (120%), we could measurably improve the image.



LELAND SPEER, M.D., *President*

The Council

Report of Meeting Held January 18, 1970

A meeting of the Council was held on Sunday, January 18, 1970, at the Ramada Inn in Topeka, beginning at 11:00 a.m. This report is a summary of the actions taken; the complete minutes are on file in the Executive Office.

Present were Leland Speer, President; J. N. Blank, T. P. Butcher, F. T. Collins, R. F. Conard, H. F. Coulter, G. W. Fields, K. L. Graham, R. H. Greer, M. R. Knapp, J. G. Lee, Jr., C. M. Lessenden, Jr., W. E. McAllaster, S. C. McCrae, J. J. Marchbanks, G. L. Mowry, L. R. Pyle, E. T. Siler, T. F. Taylor, E. D. Yoder. Also present were the following non-voting members: G. O. Bair, R. R. Beach, F. C. Beelman, O. R. Clark, J. R. Cooper, M. R. Deitz, N. L. Francis, R. M. Glover, W. R. Lentz, Edwin Lyman, J. A. McClure, J. L. Morgan, William Nice, Vale Page, B. S. Prokop, I. E. Rhodes, W. R. Roy, E. J. Ryan, E. F. Steichen, J. D. Walker. Also present were Messrs. Dwight Allen, Wellington Jones, Proctor Redd, Ray E. Selbach, Swede Swenson and Oliver E. Ebel.

Dr. Speer called the meeting to order and the minutes of the Council meeting held in September 1968 were read by the secretary and approved.

Letters from the Student American Medical Association and from the Kansas School Health Advisory Council requesting contributions of \$100 and \$500 respectively were referred to the Committee on Contributions.

Richard H. Greer, Topeka, was appointed delegate to the Kansas School Health Advisory Council. Robert D. Parman, Topeka, was appointed alternate delegate.

The terms of four physicians, two of whom are not eligible for reappointment on the Blue Cross Board, have expired. John O. Baeke, Overland Park, and John W. Travis, Topeka, were reappointed to the Board for a second term. The Council approved the suggestion that the President be authorized to appoint the other two physicians.

A motion was made and seconded that the 1971 Annual Session be held at the Glenwood Manor in Kansas City the last week of April.

The Council was advised that the KaMPAC Board requested the Society to contribute \$750 to support the educational fund. The motion that the Council contribute \$500 and refer a decision on the request for the additional \$250 to the Committee on Contributions was approved.

Dr. John L. Morgan, chairman of the Committee on Medical Education reported on the meeting with the Dean and Associate Dean of the University of Kansas Medical Center. He distributed to the Council members copies of the items listed in the plan presented by Dr. Wolf to improve the medical center and increase the number of physicians in Kansas. The motion that the Society endorse the program and that the Committee on Medical Education formulate plans for ways in which physicians might assist in its implementation carried.

The Package Plan

1. The basic budget must be increased. When outside resources diminish, the state must find a way to make up this difference.

2. It is recommended that together or separately departments of community medicine and family practice training shall be established.

3. The curriculum will be revised to offer a medical degree in three years of eleven months each to those students who wish to take the accelerated course. This will at some point in the future provide two graduating classes in one year.

4. The state will be asked to support existing and new intern and resident programs in Kansas providing competitive salaries that will serve to keep physicians in this state.

5. Future expansion requires planning and money will be requested for consideration of expanded clinic and hospital facilities. If the hospital could be modernized and additional basic science facilities constructed, the school could be expanded from its present 125 students per class to 170 students per class at reasonable cost.

6. Increase the effectiveness of the preceptor program by utilizing physicians and health delivery systems in larger Kansas cities.

The Council approved the motion to revoke the charter of the Finney County Medical Society and issue a charter to the newly organized SOUTHWEST KANSAS MEDICAL SOCIETY, which includes the following counties: Finney, Grant, Greeley, Hamilton, Haskell, Kearny, Lane, Scott, Stanton and Wichita.

Dr. Speer reported on the IRS ruling that insurance companies must report whenever a physician receives \$600 in medical services. He explained that this decision had been reversed and action postponed, but that there should be a single source through which insurance companies could obtain the

physicians' Social Security numbers. A motion was made, seconded, and passed that Blue Shield be authorized to release such information to insurance companies doing business in the state.

The request from Blue Shield for Council endorsement of a proposal that they submit bids for medical coverage, including drugs, to the Lear-Jet Corporation in Wichita was discussed. It was recommended that Blue Shield go through the local Blue Shield committees over the state with this question. It will then be studied by the State Blue Shield Relations committee, then by the commission and finally by the House of Delegates. The motion was then made and seconded that the Council does not approve Blue Shield entering into any contract which includes drug benefits. This motion carried with the understanding that Blue Shield would take the drug question to all Blue Shield Relations committees in the state.

Two resolutions were submitted to the Council by the Resource Physicians committee. The resolution relating to crippled children was tabled. The motion relating to rubella immunization was adopted.

Crippled Children

1. Re-define a crippled child as "an individual under 21 who has an organic disease, defect or condition which may hinder the achievement of normal physical, mental and/or emotional growth and development."

2. Assign to the State Department of Health the authority to administer a program to develop, extend and improve services to crippled children for the prevention of defects and diseases, location, treatment and rehabilitation of such children.

Rubella Immunization

WHEREAS, Immunization of children against Rubella is highly endorsed by public health officials and readily available in Kansas, and

WHEREAS, The inclusion of such immunization as a requirement for school entrance certification has been adopted with high priority by the Kansas Coordinating Council for Health Planning as a legislative proposal, therefore be it

Resolved, That the Kansas Medical Society endorse legislation requiring rubella immunization for school entrance certification.

Dr. Knapp, chairman of the Committee on Malpractice, stated his committee had met with a committee of attorneys and wanted to request the legislature to direct the Legislative Council to make an in-depth study of malpractice for professional persons. Copies of the proposed resolution were distributed and adopted for presentation to the legislature.

Professional Liability

WHEREAS, The number of malpractice cases against licensed professionals in the state of Kansas and across the country is on the increase; and

WHEREAS, The increasing threat of such malpractice actions tends to require that professionals order and require tests and other additional services at added expense to the public when the same may not be required, but are felt by professional people as necessary to protect against possible future litigation; and

WHEREAS, It is to the benefit of the public that architects, attorneys, engineers, dentists, physicians and other licensed professionals, and the public they serve have clear understanding of the legal responsibilities of professionals to the public; Now, therefore, be it

Resolved, By the House of Representatives, the Senate concurring therein, that the Legislative Council is authorized and directed to undertake a study of laws relative to malpractice, including those governing evidence, standards of conduct within a community, statutes of limitation and informed consent; to make recommendations as to the changes, if any, that are desirable; and to draft appropriate legislation relative thereto for presentation to the 1971 session of the legislature.

Several county medical societies submitted resolutions on Title XIX and the 25 per cent proration invoked by Welfare as of January 1, 1970. These were similar in content and contain most of the information included in the statement on the Society's position which was read by Dr. Speer and appears here as it was amended by the Council:

The Title XIX Program in Kansas

So many direct and implied accusations have been publicly issued against physicians that the Kansas Medical Society hereby expresses its position in behalf of the doctors of medicine in this state. This will be done with integrity, hopefully eliminating emotional opinions. The statement is made under authority of the Council.

Summarizing the problem in one sentence, we would say shortage of health personnel and lack of public funds are the two contributing factors to problems currently besetting the Title XIX program, including welfare in this state. Regarding the former, plans are well under way toward increasing the number of physicians educated in this state and for the increased employment of paramedical personnel to assist the physician. Regarding financing the program, we can only say this rests with the judgment of the legislature.

When the Congress created the Title XIX program, providing health care to the recipients of welfare, it was frequently stated that the intent of the program was to have these persons indistinguishable with reference to their health care from the remainder of

the population. To accomplish this the federal program declares providers of health services shall be paid their reasonable, usual and customary fees. This was amplified by explaining that charges should be comparable to those charges made for similar services rendered to other patients.

When the legislature implemented Title XIX in Kansas, they expressed similar intent. On December 31, 1968, physicians' charges were frozen prohibiting any increases. This year the Kansas State Board of Social Welfare declared an additional 25 per cent reduction from that figure.

The Kansas Medical Society has carefully attempted to analyze the cost increase. Immediately apparent is the increased case load from 89,000 a year ago to 110,000 at the present time. The legislature has not approved funds for this additional group of persons. A large portion of the increase is in the "medical only" category. This involves persons who are ill and in need of health services. They receive no other welfare assistance. Moreover, the federal government does not participate in the "medical only" category. Therefore, this program is costly and is the obligation of the Kansas taxpayer.

A second obvious factor is the increase in hospital costs. Hospital expense is to a large extent wages. The federal minimum wage law was a dramatic factor in increasing hospital charges.

A third factor is the increase in exceedingly expensive care. Kansas welfare recipients have received kidney transplants to save lives, but dialysis leading up to such procedures may cost \$50,000 and most are performed outside the state of Kansas.

Stories issued the public on the subject of Title XIX have listed overusage as a major factor of the increased cost. This cannot be substantiated.

- First, the average physician is so completely overwhelmed with demands upon his time for medically necessary services that he simply does not have time to spend on care that is not required.

- Second, the Kansas Medical Society and hundreds of its members have contributed many thousands of hours in reviewing records to assure that every patient, including the Title XIX recipient, receives full value for money spent on his health care. In those few instances where abuses have been discovered they have been corrected.

- Third, physicians report they have found little evidence that Title XIX patients have been instructed by their case workers not to ask for unnecessary health services. There is no effective plan by the Welfare Department to prevent recipients from demanding unnecessary medical services.

What will happen to the Title XIX recipients now that the payment to physicians is reduced?

1. The physician is dedicated to helping those who are sick. People on welfare will be cared for.

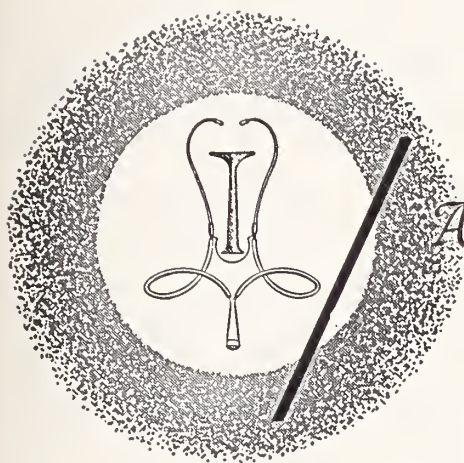
2. Because the physician will receive less for services he renders the welfare recipient, he will provide those services with the greatest possible economy of his own time and expense. This will increase hospitalization and the total expenditure.

3. The Kansas Legislature, in an attempt to provide high quality health for the needy people of this state, has defined eligible limits and has described health care they should receive. If this is to be done in a way that health care of recipients of welfare are in truth indistinguishable with reference to their health care from the remainder of the population, sufficient funds must be appropriated to defray the necessary cost. When the Kansas Medical Society has some assurance that Kansas expects to provide high quality health services to its indigent in accordance with federal law, we will again cooperate in every possible way with the Department of Social Welfare in the fair, equitable and economical operation of this program. Until then we have no alternative except to advise the 2,000 doctors of medicine who are members of the Kansas Medical Society that their relationship with the Title XIX program in this state is at their own selection.

A resolution passed by the Sedgwick County Medical Society challenging the Board of Social Welfare in the courts to determine whether the Director of the Department of Social Welfare exceeded his authority in invoking the 25 per cent proration was discussed. The representatives from the Sedgwick County Society invited the Kansas Medical Society and all county societies or council districts to join them in this. The president of the Sedgwick County Society stated that this suit was a mechanism to inform the people of what effect proration will have on patients and not determined on the basis of money paid to the physicians. A motion was made and seconded that the Kansas Medical Society join the Sedgwick County Society in their lawsuit. It was moved and seconded that the motion be tabled. The vote in favor of tabling the motion carried.

The motion was made and seconded that the Society requests Blue Cross-Blue Shield to contract with the State Board of Social Welfare for intermediary services under Title XIX, at a figure whereby subscribers will sustain no loss. This motion carried.





Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the Doctor's Calendar. Notice of the session is posted in advance to allow the physician time to make preparations.

MARCH

- Mar. 8-10 American Association of Pathologists and Bacteriologists, Chase-Park Plaza Hotel, St. Louis. Write: Kenneth M. Brinkhous, M.D., Dept. of Pathology, University of North Carolina School of Medicine, Chapel Hill, North Carolina 27514.
- Mar. 11-12 Third annual drug conference, Drug Therapy: Psychoactive and Anticonvulsant Drugs in Medical Practice, University of Missouri-Columbia Medical Center. Write: The Executive Director, Continuing Medical Education, M-175 Medical Center, Columbia, Missouri.
- Mar. 16-20 American College of Allergists, Americana Hotel, Bal Harbour, Florida. Write: Mr. Eloï Bauers, Exec. Vice President, 2100 Dain Tower, Minneapolis 55402.
- Mar. 20-21 AMA National Congress on Socio-Economics of Health Care, Palmer House, Chicago. Write: Mr. Nicholas M. Griffin, Div. of Health Service, 535 N. Dearborn, Chicago 60610.
- Mar. 30-Apr. 4 American College of Radiology, Statler-Hilton Hotel, Dallas. Write: Wm. C. Stronach, LL.B., 20 N. Wacker Drive, Chicago 60606.

APRIL

- Apr. 10-11 22nd Annual Midwest Cancer Conference, "Cancer and Its Clinical Management," Broadview Hotel, Wichita.
- Apr. 10-12 American Society of Internal Medicine, Warwick Hotel, Philadelphia. Write: William R. Ramsey, Exec. Dir., Hearst Building, Third at Market St., San Francisco 94103.

- Apr. 12-17 American College of Physicians, Bellevue Stratford Hotel, Philadelphia.
- Apr. 26-30 1st International Congress on Group Medicine, Winnipeg, Manitoba, Canada. New Horizons in Health Care offers a world-wide forum for the discussion of methods for provision of comprehensive health services, assessing the role of the physician as well as that of allied health personnel. Write: Congress Secretariat, 1st International Congress on Group Medicine, 425 St. Mary Ave., Winnipeg 1, Manitoba, Canada.
- Apr. 30-May 2 Annual meeting of the Mid-Central Orthopaedic Society, Skirvin Hotel, Oklahoma City. Write: Mrs. Patricia Lovan, Exec. Secretary, 14 Douglas Parkway, Wichita 67206.

POSTGRADUATE EDUCATION

University of Kansas:

- Mar. 16-18 *Pediatrics*
- Mar. 23-25 *Surgery*
- Apr. 6-8 *Ophthalmology*
- Apr. 13-15 *Anesthesiology*
- Apr. 17 *Infectious Diseases*

For further information write the Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas 66103.

University of Colorado:

- April 15-17 *Management and Care of Respiratory Insufficiency*

For further information write the Office of Postgraduate Medical Education, University of Colorado School of Medicine, 4200 East 9th Ave., Denver 80220.

(Continued on page 61)

American Medical Association

Actions of the House of Delegates, 23rd Clinical Convention, Denver, November 30-December 3, 1969

President's Address

At the opening session of the House, Dr. Gerald Dorman, president of the AMA, challenged the Association to establish or see to the establishment of a workable system of patient care for all the people of the nation; and to strengthen the organization itself by making it relevant to all physicians.

Regarding the first of those, the president said "the AMA can serve the best interests of physicians only when we serve those of the patient first. We are banded together to make ourselves more effective physicians so that we can serve our patients better."

Dr. Dorman added that meeting all of the problems calls for a "separate, cabinet-rank department of health, drawing together all health activities of the government under one roof."

Another segment of the medical profession that must be attracted is the future physician, Dr. Dorman said. The AMA must find ways "to attract medical students, interns, residents and other young physicians." Anticipating objections, he said "We need to face up realistically to the fact that although we don't like the criticism of some of the younger members and would-be members of our profession—and perhaps we don't approve of the leftward lean of some of their politics—these young professionals are nonetheless as much, or more, patient oriented than some of us."

Health Care of the Poor

The House adopted these statements of policy, many parts of which are reaffirmation of existing policy:

"It is a basic right of every citizen to have available to him adequate health care; it is a basic right of every citizen to have a free choice of physician and institution . . . ; the medical profession, using all means at its disposal, should endeavor to make good medical care available to each person.

"The medical profession must take the leadership and actively support constructive community efforts to eliminate those conditions that adversely affect health.

"The health problems of the poor are basically community health problems, and . . . programs must be adapted to local needs. . . ."

The adopted report contained these recommendations:

1. Increased funding of effective government programs for the health care of the poor and medically indigent.

2. Multiple-year funding in selected programs such as neighborhood health centers; governmental and private programs to eliminate unfavorable environmental conditions, particularly in disadvantaged areas.

3. AMA support of and participation in a number of experimental projects to develop and evaluate innovative methods of health care delivery with a variety of provider reimbursement mechanisms.

4. Expansion of health careers by increasing recruitment from disadvantaged areas.

5. Increased attention by medical schools to all aspects of community medicine.

6. Enforcement of existing federal and local authority to halt quackery, especially that which exploits the poor.

Planning and Development

After considerable reference committee and House floor debate on the report of the Committee on Planning and Development (both the majority and minority reports), the House voted:

1. To establish an ad hoc Committee on Long Range Planning and Development. Its membership is nine, appointed as follows: one from the Board of Trustees; five from the House; one from SAMA; and two from the AMA membership at large.

2. To send the majority and minority reports "to the component state societies for such specific action by their governing bodies as they deem warranted, it being understood that the resolutions so generated and all recommendations made in the reports (majority and minority) will be considered by the appropriate reference committees at the Annual Convention of 1970."

Statement on Marihuana

The House adopted a policy statement on marihuana which includes the following points:

"Cannabis (marihuana) is a dangerous drug and as such is a public health concern. It is a psychoactive substance which can have a marked deleterious effect on individual performance and social productivity. A significant number of exposed persons become chronic users with concomitant medical and interpersonal problems.

"The sale and possession of marihuana should not be legalized. . . . If all controls on marihuana were eliminated potent preparations would dominate the market, and if the potency were legally controlled, predictably there would be an illicit market for the more powerful forms—leading to more serious medical and social consequences."

AMA-ERF Institute for Biomedical Research

" . . . the current cost of maintaining the Institute at its present location is constantly rising, with no predictable sources of outside funds being available, and without an increase in dues; therefore be it resolved that the Institute for Biomedical Research be discontinued as soon as the Board of Directors of AMA-ERF deems feasible. . . . "

Private Practice of Medicine

"Whereas, the private practice of medicine is still believed to be the best method of serving mankind's medical needs; and . . . there is no specifically designated method in organized medicine for the promotion of private practice; therefore, be it resolved that the House of Delegates establish a Committee on Private Practice, which shall consist of nine active members of the Association and be constituted as a standing committee of the Council on Medical Service, a council of this House of Delegates."

Functions of the committee are to encourage and promote the private practice of medicine; to develop new methods that will promote private practice throughout medical school, graduate and postgraduate training; help the private practitioner improve his method of providing medical care (including business practices and utilization of allies); publicize the merits of private practice; encourage and help the development of similar committees by state medical associations; and maintain constant liaison with other committees and councils of the AMA to achieve those objectives.

Medicine and Government

Affirmed its support of the concept of Regional Medical Programs as enacted in PL 89-239 and urged members to help guide Regional Medical Programs in line with the highest tradition of the private practice of medicine.

Expressed its "firm opposition to on-site auditing in physicians' offices of tax-supported programs by representatives of governmental agencies" and urged that problems between physicians and intermediaries or between physicians and governmental agencies be referred to local peer review committees.

Opposed legislation requiring the filing of information reports by insurance carriers or other third-

party payers of payments made to patients, since the reports would not necessarily indicate what, if any, payment was made to physicians.

Adopted a legislative proposal that would require (unless the physician designates otherwise) that the labels of drug containers dispensed to patients carry the established or trade name, quantity and strength of the drug dispensed. However, the House opposed the use of compulsory government prescription forms.

Cost of Care

Expressing deep concern about the ever-increasing costs of hospital care services, the House resolved that the "AMA Board of Trustees request the Board of Trustees of the American Hospital Association to join with it in urging hospital boards and hospital medical staffs to develop and institute cost control measures for hospital care services."

At the same time, the House urged all state medical associations to "submit promptly any other realistic proposals which they believe should be developed as AMA proposals for effective, widely available medical care insurance or prepayment plans."

Strengthening the AMA

The House urged state and county medical societies "to take action to make available to interns and residents active membership or its equivalent" and resolved that "the Council on Medical Education and other bodies within the American Medical Association intensify their efforts to initiate additional meetings and encourage continuing dialogue with medical students, preferably in conjunction with local chapters of SAMA; interns and residents in their respective states."

The House directed that the AMA "aggressively pursue close working relationships with the medical specialty societies" and adopted a Board report describing its recently created Commission on Foreign Medical Graduates, consisting of representatives from the AMA, American Hospital Association, Association of American Medical Colleges, Federation of State Medical Boards, Association for Hospital Medical Education, National Medical Association, Advisory Board for Medical Specialties and the Education Council for Foreign Medical Graduates.

A resolution was adopted strongly urging the Council on Medical Education and the specialty boards "to move forward with the acceptance of qualified osteopathic physicians into their training program and specialty board examinations." The House noted that the American Board of Internal Medicine is the sixth specialty board to declare that it will accept for examination graduates of osteo-

pathic schools who have satisfactorily completed the requirements of the board in regard to approved internship, residency and fellowship training.

Additional Actions of the House

Approved a report on professional liability that said "the feasibility of an AMA-sponsored professional liability insurance program is now being considered by the Board of Trustees."

Reaffirmed present policy on therapeutic abortion while rejecting a resolution that urged revision of state laws to permit abortion upon demand.

Encouraged the individual members of the AMA to urge their employees to become AAMA members by offering whatever incentives seem appropriate.

Adopted Resolution 14 asking that the American Medical Association Public Affairs Division, in cooperation with state medical societies, provide a system for the exchange of program ideas and materials, and that the AMA further provide leadership, programming and materials so that the stated objectives and responsibilities of the Public Affairs Division may be carried out.

Amended and referred this portion of Report T to the Board of Trustees and its Council on National Security. Adopted Report T as amended:

- "b. Considering amendment of the present draft law to provide deferment for those physicians who voluntarily serve as physicians in areas of critical need.

This deferment from the physicians military draft would remain in effect only as long as the physician practiced in an area of critical need."

Report R of Board of Trustees approved and to be given the widest possible distribution to the state and county medical associations together with the following statement:

The "new insurance techniques" referred to on line 36, page 8 of Report R relate to the proposal made at the 1969 Annual Convention in Report D of the Board of Trustees (A-69) and accepted by the House of Delegates. This proposal called for the exploration of some mechanism for pre-paid economic protection for persons injured as a consequence of medical or other accidents arising in the course of patient care. This would avoid the necessity for proof of fault and provide relief from liability on the part of the physician.

The Following statement adopted:

That the Board of Trustees be requested to continue the urgent priority in the search for the solutions to the crisis of professional liability and

liability insurance and that each state association be urgently encouraged by its respective Delegates to supply to the AMA headquarters copies of proposed legislation, proposed programs and other pertinent data so that AMA headquarters may function more effectively as a clearing house for such information.

Resolution 15 suggested that educational opportunities for students, interns and resident physicians not be limited to university hospitals and was adopted as amended.

WHEREAS, Educational opportunities are not limited to hospitals affiliated with medical schools; and

WHEREAS, The concentration of medical students, interns and resident physicians in university hospitals tends to captivate these trainees; and

WHEREAS, A wider dispersal of these trainees could enhance their educational experience; therefore be it

Resolved, That the Board of Trustees of the American Medical Association, through the appropriate councils and committees, study the total picture for training and education of medical students, interns and resident physicians; and be it further

Resolved, That the Board of Trustees exercise its influence for wider distribution of medical students, interns and resident physicians, especially in non-medical school affiliated hospitals; and be it further

Resolved, That educational experience, where feasible and practical, expose these trainees to the merits of practice under a variety of environmental circumstances.

Substitute Resolution 28 was adopted in lieu of Resolutions 28, 32 and 48:

WHEREAS, Physicians throughout the country look to the American Medical Association to provide leadership in making optimum medical care available to all persons in the United States by proposing realistic mechanisms, embodying the best thinking of all groups that are qualified by experience in the financing and delivery of medical care to patients; therefore be it

Resolved, That the House of Delegates reaffirms its endorsement of the tax credit plan and urges the Board of Trustees to give this plan the strongest support and widest publicity among members of the Association and the public; and be it further

Resolved, That the American Medical Association, through appropriate Councils and Committees, intensify its efforts to develop other realistic and effective plans of medical care coverage available for all persons in the United States, utilizing multiple methods of financing and free choice of mechanism based on adequate standards of coverage; and be it further

Resolved, That all state medical associations be urged to submit promptly any other realistic proposals which they believe should be developed as AMA proposals for effective, widely available medical care insurance or prepayment plans; and be it further

(Continued on page 61)



Personalities—IN KANSAS MEDICINE

Dr. and Mrs. Galen Fields are spending three weeks this month in Limbe, Haiti. Dr. Fields is in charge of the medical care for a work crew building a dining hall and warehouse for the Good Samaritan Hospital, which is a combination Baptist mission hospital and seminary school.

Richard O. Nelson, Lawrence, and Francis Bice, WaKeeney, have been appointed by Governor Robert Docking to three year terms on the State Board of Health.

William E. Larsen, Kansas City, will speak on postgraduate education at the regional meeting for State Chairman of the Committees on Medicine and Religion. The meeting, sponsored by the AMA's Department of Medicine and Religion, will be held in Chicago next month.

New officers for the board of directors of the Topeka Blood Bank, Inc., are **Clarence E. Sherwood,** president; **Donald W. Selzer,** vice president; **Robert P. Woods,** secretary; and **Robert H. O'Neil,** treasurer. New board members include **Robert C. Keys, Jr., Victor E. Reinking, and Antonio Huaman.**

Kermit Wedel, Minneapolis, was elected to head the Ottawa County Association for Mental Health at the association's annual meeting in November.

Harold O. Bullock, Independence, attended a course sponsored by the American College of Car-

diology and St. Barnabas Hospital in New York City in December.

Robert L. Ward, who practiced medicine in Tribune before moving to Raton, New Mexico, in 1968, has returned to Kansas and is now practicing in Leoti.

John L. Morgan, Emporia, was the featured speaker at the annual senior recognition service at the College of Emporia in December. Dr. Morgan's talk was entitled "The Current Crisis in Medicine."

Thomas M. Cable, Leoti, retired from medical practice the first of the year.

James C. Warren, professor at KUMC, has accepted a position with Washington University School of Medicine and will assume his new position there as professor and head of the department of obstetrics and gynecology in July 1971.

E. A. Walsh, Onaga, was recently elected to the board of directors of the North Central Guidance Center.

The Sisters of the Nemaha Valley Hospital were hostesses to a combined Christmas party and special tribute to **Dr. and Mrs. Morgan L. Mollohan** of Seneca. Dr. Mollohan retired the first of the year and he and Mrs. Mollohan will move to Minnesota early in the summer.



TEXTBOOK OF PEDIATRICS by Waldo E. Nelson, Victor C. Vaughan, III, and R. James McKay (9th edition). W. B. Saunders Company, Philadelphia, 1969. 1,590 pages illustrated. \$21.50.

The ninth edition of what has become for many of us a mainstay and anchor of authority in pediatrics has been modified and updated to maintain that position. Dr. Vaughan and Dr. McKay have joined Dr. Nelson as co-editors to meet the challenge of presentation of new material, particularly in genetics and metabolic diseases, in such a way as to amplify and clarify the old. Throughout the book the hand of Dr. Nelson is evident. He stresses "the individualization of the child as a necessity to proper care," and "the need for the pediatrician to have everlasting patience, faith in the child's ability to solve his own problem and an ability to see the problem through the child's eyes as fundamental to the understanding of the activities and reactions of the child."

To the familiar and useful tables of growth and development and summaries of poisoning are added a section on syndromes divided into Bone and Connective Tissue Dysplasias, Chromosomal Imbalances, and Miscellaneous Patterns of Malformation. These tables are marked for easy reference. The syndromes are labeled as to mode of genetic transmission, if known, and give references for further study. Particular notice should be made of the sections on fetus and newborn, inborn errors of metabolism and immunity, allergy and infectious diseases which have been revised, updated and expanded.

The book is an excellent reference textbook for the practicing physician as well as the beginning stu-

dent of pediatrics. It contains a great deal of the newest information in the field. The book is well organized and reads easily. Those who have older editions of Nelson will be dissatisfied with them after seeing this edition.—*A.C.C.*

COLLATERAL CIRCULATION IN CLINICAL SURGERY by D. E. Strandness, Jr. W. B. Saunders Company, Philadelphia, 1969. 633 pages illustrated. \$18.50.

The purpose of this book is to consider in detail those diseases in which a consideration of collateral circulation is important.

In each area of the circulation to be discussed, attention is devoted to normal anatomy, congenital variations, and the available collateral pathways.

The first chapter considers functional characteristics of normal and collateral circulation. Following chapters consider the collateral circulation to the heart and lungs; thoracic aorta; upper and lower extremities; stomach, pancreas, liver, spleen and kidney; small and large intestine; extracranial arterial circulation to the brain and arterial circulation of the nervous system.

It is a well written book supplemented with anatomic drawings.

This is an excellent book that will be useful not only to the experienced physician, vascular surgeon, and surgical specialist, but to the intern and resident as well. This book should provide a good background in this important area of vascular disease and serve as a good starting point for further study.—*W.H.Z.*

Along the Bookshelf

Clendening Medical Library

RECENT ACQUISITIONS

- Bandura, Albert. Principles of behavior modification. New York, Holt, Rinehart and Winston, 1969.
- Benjamin, Annette Francis. New facts of life for women. Englewood Cliffs, N. J., Prentice-Hall, 1969.
- Bray, Patrick F. Neurology in pediatrics. Chicago, Year Book Medical Publishers, Inc., 1969.
- Cleland, Charles Carr. Mental retardation: approaches to institutional change. New York, Grune & Stratton, 1969.
- Corning, Peter A. The evolution of medicare, from idea to law. Washington, U. S. Govt. Print. Off., 1969.
- Elliott, Lawrence. The legacy of Tom Dooley. New York, World Pub. Co., 1969.
- Easson, William M. The severely disturbed adolescent; inpatient, residential, and hospital treatment. New York, International Universities Press, 1969.
- Everson, Tilden C. Cancer of the digestive tract, clinical management. New York, Appleton-Century-Crofts, 1969.
- Ferris, Louanne. I'm done crying. New York, published by M. Evans and Co. Inc. and distributed in association with J. B. Lippincott, Philadelphia, 1969.
- Fox, Robert M. The medicolegal report; theory and practice. Boston, Little, Brown, 1969.
- The future of the family. New York, Family Service Association of America, 1969.
- Mennell, John McMillan. Foot pain. 1st ed. Boston, Little, Brown, 1969.
- Pepys, J. Hypersensitivity diseases of the lungs due to fungi and organic dusts. Basel, New York, Karger, 1969.
- Poe, William D. The old person in your home. New York, Scribner, 1969.
- Schwarzrock, Shirley Pratt. Effective medical assisting. Dubuque, Ia., Brown, 1969.
- Secor, Jane. Patient care in respiratory problems. Philadelphia, Saunders, 1969.
- Shanks, Seymour Cochrane. A text-book of x-ray diagnosis. 4th ed. Philadelphia, Saunders, 1969.
- Sleep; physiology & pathology; a symposium. Philadelphia, Lippincott, 1969.
- Stoll, Basil Arnold. Hormonal management in breast cancer. Philadelphia, Lippincott, 1969.
- Stone, Nelson H. Profiles in burn management. Miami, Industrial Medicine Pub. Co., 1969.

Symposium on Obesity: Medical and Scientific Aspects, 1st, London, 1968. Obesity: Medical and scientific aspects; proceedings. Edinburgh, E. & S. Livingstone LTD., 1969.

Announcements

(Continued from page 55)

University of Nebraska:

- Mar. 5-6 *Advances in Hematology*
 Mar. 19-20 *Obstetrics and Gynecology*
 Mar. 30-31 *Psychiatry in General Practice*

For further information write: Department of Postgraduate Education, University of Nebraska Medical Center, 42nd and Dewey Avenue, Omaha 68105.

A seminar series in Nuclear Medicine has been established at the Kansas City General Hospital by the Radioisotope Division in cooperation with the medical staff. The following speakers will be participating:

- Feb. 27 *Current Practices in Nuclear Medicine*—Henry N. Wagner, Jr., M.D., Johns Hopkins University
 Mar. 26 *Lung Function*—Wil B. Nelp, M.D., University of Washington
 Apr. 24 *Pediatric Nuclear Medicine*—Henry N. Wellman, M.D., Bureau of Radiological Health

All professional and technical persons are invited. The seminars will be held in the Jackson County Medical Society auditorium, Kansas City General Hospital, Kansas City, Missouri, beginning at 4:00 p.m.

AMA

(Continued from page 58)

Resolved, That the Board of Trustees be urged to take all appropriate action to stimulate cooperative effort, possibly in the form of a task force, with the American Hospital Association, the National Association of Blue Shield Plans, the Blue Cross Association, the Health Insurance Council and other interested organizations, and including significant consumer representation, to achieve the implementation of the most practical, flexible and effective mechanisms for medical care coverage, available to all persons in the United States.

LUCIEN R. PYLE, M.D.
 JOHN C. MITCHELL, M.D.
Delegates from Kansas



FUNSTON J. ECKDALL, M.D.

Dr. Funston J. Eckdall, 60, Emporia, died December 19, 1969, in Newman Memorial County Hospital at Emporia.

Dr. Eckdall was born March 6, 1909, at Emporia where he spent most of his life. He received his medical degree from the University of Kansas School of Medicine in 1935. After completing his internship and postgraduate study, he returned to Emporia in 1940. He was a veteran of World War II, having been a major in the U. S. Army. Dr. Eckdall was in medical practice in Emporia for more than 25 years and had been a Santa Fe Railway surgeon for many years.

Surviving Dr. Eckdall are his wife and five daughters.

EDISON S. HYMER, M.D.

Dr. Edison S. Hymer, 86, pioneer Sedgwick physician, died December 17, 1969, in a Wichita hospital.

He was born November 6, 1883, at Albany, Missouri. He received his doctor of medicine degree from Northwestern University Medical School in 1905. After interning at St. Francis Hospital, Wichita, and practicing for a short time in McPherson, he moved to Sedgwick in 1907 and also established an office in Wichita. He served as Harvey County health officer for 12 years, and was in medical practice in Sedgwick for 62 years.

Dr. Hymer is survived by his wife and daughter.

EMMIT E. PETERSON, M.D.

Dr. Emmit E. Peterson, 89, retired Halstead physician, died December 10, 1969, in the Halstead Hospital.

Dr. Peterson was born in Leavenworth on July 8, 1880. He was a graduate of Park College, Parkville, Missouri, and received his degree in medicine from the University Medical College of Kansas City, Missouri, in 1908. He had lived in Halstead for more than 40 years.

A daughter survives Dr. Peterson.

Memorial contributions may be made to the Kansas Health Museum, Halstead.

LaVERNE B. SPAKE, M.D.

Dr. LaVerne B. Spake, Kansas City, died on December 19, 1969, in St. Luke's Hospital, Kansas City, Missouri. He was 79 years old.

Born February 7, 1890, in Kansas City, Missouri, Dr. Spake lived in the Kansas City area almost all his life. He received his medical degree from the University of Kansas School of Medicine in 1913. After serving in the army during World War I, he entered the University of Pennsylvania for postgraduate study and then the University of Vienna, Austria, for further training. He was professor emeritus at the University of Kansas Medical Center. The hearing and speech department which he founded in 1947 was named for him in 1957. In 1954, he received the first gold key award given by the American Academy of Ophthalmology and Otolaryngology.

Dr. Spake is survived by his wife, a son and two daughters. The family suggests memorials to the Dr. LaVerne B. Spake Hearing and Speech Department, University of Kansas Medical Center, or to St. Paul's Episcopal Church, Kansas City, Kansas.

JAMES E. WALLEN, M.D.

Dr. James E. Wallen, Ottawa, died December 12, 1969, at the age of 71.

Dr. Wallen was born May 16, 1898, at Parsons. He was a graduate of Baker University, Baldwin, and received his medical degree from Northwestern University in 1931. After completing his internship and residency training in obstetrics, he moved to Ottawa in 1932. He was a veteran of World War II, serving in the U. S. Navy Medical Corps. Following his retirement in 1957, Dr. Wallen continued to assist at Ransom Memorial Hospital as an anesthesiologist.

He is survived by his wife.

Contributions may be made to the memorial fund of the First United Methodist Church or to Ransom Memorial Hospital, Ottawa.

KANSAS STATE DEPARTMENT OF HEALTH

TOPEKA, KANSAS

Division of Disease Prevention & Control—Division of Vital Statistics—Kansas Morbidity Incidence

Summary of Cases Reported in October, 1969 and 1968

<i>Diseases</i>			<i>October</i>	<i>January-October Inclusive</i>		
	1969	1968	<i>5-Year Median 1965-1969</i>	1969	1968	<i>5-year Median 1965-1969</i>
Amebiasis	—	—	1	3	11	11
Aseptic meningitis	1	—	—	10	6	7
Brucellosis	—	—	—	1	2	2
Diphtheria	—	—	—	—	—	—
Encephalitis, prim., infect.	—	5	6	8	13	20
Encephalitis, post-infect.	—	—	—	2	9	2
Gonorrhea	504	493	364	4,271	3,785	3,332
Hepatitis, infectious	23	39	23	247	340	247
Measles (Rubeola)	—	1	*	8	9	*
Meningococcal meningitis	—	2	1	15	26	15
Mumps	—	8	*	97	714	*
Pertussis	—	—	—	—	4	11
Poliomyelitis	—	—	—	—	—	—
Rheumatic fever	—	—	1	7	3	3
Rubella (German Measles)	—	1	*	46	119	*
Salmonellosis	11	17	17	151	251	237
Scarlet fever	1	3	3	29	31	61
Shigellosis	7	8	7	67	81	67
Streptococcal infections	39	81	112	1,860	1,856	1,911
Syphilis	164	153	153	1,615	1,113	1,046
Tinea capitis	1	1	4	35	43	43
Tuberculosis	15	24	21	176	198	198
Tularemia	—	—	—	3	5	4
Typhoid fever	—	—	—	—	2	2

* Statistics are not available for 5-year median.

111th Annual Session

Kansas Medical Society

May 3-6, 1970

Broadview Hotel, Wichita

Make Your Reservations Now!

The Month in Washington

The Internal Revenue Service postponed until next January 1 one provision of a new requirement that health insurance companies report to the IRS payments of \$600 or more a year to a physician.

The delayed provision covers payments other than under medicare and medicaid. Payments of \$600 or more under these government programs must be reported to the IRS. A spokesman said the reporting of payments other than under the government programs was delayed for a year to allow further time for working out compliance procedures.

The IRS regulation applies only to direct payments to physicians. The Senate added an amendment to an omnibus tax bill that would have extended the requirement to indirect payments also. But House-Senate conferees took out the amendment.

Another provision unfavorable to physicians was knocked out of the tax bill, but a third was retained.

The Senate rejected a proposal that would have restricted the tax advantages gained by physicians who organize professional corporations under state laws to establish retirement plans. The Senate Finance Committee had added an amendment that would have set an annual limit of \$2,500 per individual, the same as specified under the so-called Keogh law. But the Senate, by a vote of 65-25, knocked out the amendment, leaving physicians, lawyers, engineers and other members of professional corporations able to set aside as much of their income for retirement as they choose.

As finally passed by Congress, the measure includes a provision putting congressional approval on an IRS ruling that advertising revenue of medical and other non-profit, tax-exempt organizations is subject to the regular corporate income tax. Journals of state medical societies, as well as the *Journal of the American Medical Association*, are affected.

Medicare's Part B premium partially covering physicians' fees will go up from \$4 to \$5.30 a month next July 1.

Health, Education and Welfare Secretary Robert H. Finch blamed his predecessor in the post, Wilbur J. Cohen, for the size of the 32 per cent increase in the premium which is matched by the federal government.

Finch noted that the present \$4 premium rate, set in December 1968, was too low to cover costs during the current premium period and that the special Medical Insurance Trust Fund has been drawing on

its reserves. He said that failure to increase the premium rate last December, in accordance with advice from Social Security Administration actuaries had made it necessary now, in effect, to promulgate two increases at once. Moreover, the depletion of the trust fund that has occurred because of the inadequate rate had made it necessary, he said, to provide for a somewhat higher margin of contingency than would otherwise be necessary.

About half the increase, 64 cents, was needed to finance the program at the level of current operations. The other 66 cents of the \$1.30 increase was distributed:

—26 cents to cover an estimated increase of about 6 per cent in the level of physicians' fees;

—about 12 cents to cover an estimated increase of 2 per cent in the utilization of services under the program;

—about 6 cents because the \$50 deductible which a patient pays will be a smaller proportion of the total covered charges;

—the remaining 22 cents to provide a 4 per cent margin for contingencies.

A National Heart and Lung Institute task force predicted that the demand for heart transplants will increase beyond the present level of about 100 a year and exceed the number of the organs available for the operation.

The report of the task force on cardiac replacement also said:

—Less than 16 per cent of the 200,000 Americans under 65 who die each year from heart disease are good candidates for transplants.

—Rejection of the transplanted heart will remain "the greatest barrier to prolonged survival."

—Development of an artificial heart is now a distinct possibility.

—The federal government should emphasize research on the prevention, early detection and early treatment of heart disease.

—A new definition of death is needed.

—Total transplant charges for 36 patients averaged \$18,694 per patient.

—Heart transplants have been performed on 148 patients, with 23 persons still surviving, 16 of them in the United States.

—More than 32,000 heart disease victims can be considered transplant candidates, but there are only about 22,000 possible donors a year, the report said.

The Kansas Medical Society—1969-1970

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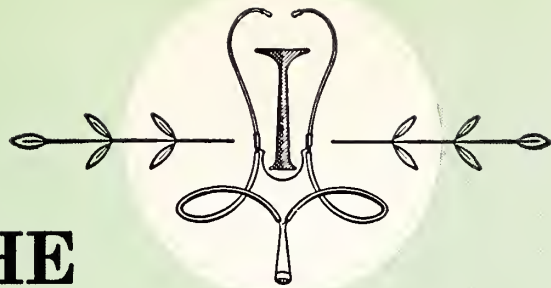
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THE

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MARCH
1970

VOL. LXXI
NO. III

U. C. SAN FRANCISCO
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MAR 26 1970

The girth control pill



Tepanil[®] Ten-tab[®] (continuous release form) (diethylpropion hydrochloride)

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When girth gets out of control, TEPANIL can provide sound support for the weight control program you recommend. TEPANIL reduces the appetite—patients enjoy food but eat less. Weight loss is significant—gradual—yet there is a relatively low incidence of CNS stimulation.

Contraindications: Concurrently with MAO inhibitors, in patients hypersensitive to this drug; in emotionally unstable patients susceptible to drug abuse.

Warning: Although generally safer than the amphetamines, use with great caution in patients with severe hypertension or severe cardiovascular disease. Do not use during first trimester of pregnancy unless potential benefits outweigh potential risks.

Adverse Reactions: Rarely severe enough to require discontinuation of therapy, unpleasant symptoms with diethylpropion hydrochloride have been reported to occur in relatively low incidence. As is characteristic of sympathomimetic agents, it may occasionally cause CNS effects such as insomnia, nervousness, dizziness, anxiety,

and jitteriness. In contrast, CNS depression has been reported. In a few epileptics an increase in convulsive episodes has been reported. Sympathomimetic cardiovascular effects reported include ones such as tachycardia, precordial pain, arrhythmia, palpitation, and increased blood pressure. One published report described T-wave changes in the ECG of a healthy young male after ingestion of diethylpropion hydrochloride; this was an isolated experience, which has not been reported by others. Allergic phenomena reported include such conditions as rash, urticaria, ecchymosis, and erythema. Gastrointestinal effects such as diarrhea, constipation, nausea, vomiting, and abdominal discomfort have been reported. Specific reports on the hematopoietic system include two each of bone marrow depression, agranulocytosis, and leukopenia. A variety of miscellaneous adverse reactions have been reported by physicians. These include complaints such as dry mouth, headache, dyspnea, menstrual upset, hair loss, muscle pain, decreased libido, dysuria, and polyuria.

Convenience of two dosage forms: TEPANIL Ten-tab tablets: One 75 mg. tablet daily, swallowed whole, in midmorning (10 a.m.); TEPANIL: One 25 mg. tablet three times daily, one hour before meals. If desired, an additional tablet may be given in mid-evening to overcome night hunger. Use in children under 12 years of age is not recommended.

T-006A / 1/70 / U.S. PATENT NO. 3,001,910



THE NATIONAL DRUG COMPANY
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Twenty-Fourth
Annual
University of Kansas
School of Medicine
Issue

Dean's Report—1970

The University of Kansas Medical Center

GEORGE A. WOLF, JR., M.D.,* *Kansas City*

THE DEADLINE OF THE JOURNAL OF THE KANSAS MEDICAL SOCIETY requires submission of this manuscript prior to the convening of the Legislature and this article will be in print about the time of the adjournment. This annual Dean's report will have some of the elements of a "who dunnit" and you will have to consult your local newspaper for the final answers.

First, however, 1969 was marked by a farewell to Chancellor Wescoe and a greeting to Chancellor E. Laurence Chalmers, who has been on hand since the late summer. Chancellor Chalmers points out that he is the first non-M.D. Chancellor of the University of Kansas in many years. He, however, is determined to learn about our medical center and help us with our problems. Each week finds him at the medical center for several hours working with the staff of the Dean's office and making himself available to faculty and students for whatever their needs might be.

Our new Chancellor and all the Regents approved in June our regular budget, calling for approximately \$2 million more in state tax revenue, which would bring the percentage of tax support of the University of Kansas Medical Center up from 25 per cent toward what it used to be in the past 10 to 15 years. Each year the state has reduced our requests for additional tax revenue by 15 to 20 per cent and we have barely held our own with inflation, rising costs, a doubled enrollment and so forth. Thus, we must catch up to our financial needs to operate the medical center as it now exists.

If this is done we can take on new things. In June, therefore, the Regents permitted us to prepare a separate so-called "package" designed hopefully to increase the number of doctors in Kansas. This package was submitted to the Regents and approved and presented to the Governor for his consideration of this budget message to be presented publicly in January.

Briefly, the elements of the package or request to the Legislature are as follows:

1. The curriculum leading to the M.D. degree is

to be rearranged to allow a student to complete his work in three eleven-month years if he wishes. We also plan to introduce clinical work during the first year of the medical school experience. A relatively small amount of funds will be necessary to add a few clinical teachers to the program because of the early introduction of clinical work.

2. The establishment of a Department of Family Practice will provide our students and others the opportunity of obtaining certification by the American Board of Family Practice, established in February 1969. Funds will be needed for salaries and space.

3. The establishment of financial incentives to major hospitals in Kansas to encourage them to develop better and new accredited internships and residency programs in the variety of specialty areas including family practice. This is based on the study by Weiskotten and others¹ which indicates that physicians are more likely to settle in the area where they take their internship than in the area where they go to medical school.

4. Encourage the University of Kansas Medical Center to develop a plan for acquiring a new hospital to upgrade the existing outmoded structure and coincidentally to study the expansion of educational opportunity for physicians and other health professionals for Kansas.

Included in this consideration will be a study of those needs at the University of Kansas Medical Center necessary to increase the enrollment of health professional students, to provide for an increase in the class sizes a new basic science building is an absolute necessity. The urgency of considerations in this area is obvious when one considers that two years for architectural planning and administrative planning of the structure and program, plus two years of building would precede admission of the increased numbers of students. Three, eleven-month years of medical education and two to four years of postgraduate

(Continued on page 75)

1. Weiskotten, H. G., Wiggins, W. S., Altenderfer, M. E., Gooch, M. and Tipner, A.: An analysis of the distribution and characteristics of medical school graduates, 1915-1950. *J. of Med. Ed.* 35:1071-1121, 1960.

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Postgraduate Education

Answers to Some Questions About Continuing Education

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THE TERM "POSTGRADUATE MEDICAL EDUCATION" has so many different meanings in different quarters that I shall use another term that has recently gained currency, "continuing education," to encompass all learning activities that are not for academic credit engaged in by persons for the purpose of keeping up-to-date in their professions and for bettering their professional status. In this paper I shall attempt to answer several basic questions: (1) Continuing education for whom? (2) Continuing education for what purpose? (3) Continuing education by whom? (4) Continuing education, where? (5) Continuing education, when? and (6) Continuing education, how?

Continuing Education for Whom?

Most of us usually consider education for health professionals to include, in addition to physicians, mainly nurses and medical technologists, but it has become increasingly apparent that continuing education must be for all of the many health professionals if it is to be maximally effective. It would be difficult to enumerate the many "health professions" that now exist, but I wish to emphasize that they include medical social workers, dietary workers, and even hospital housekeeping personnel. In order for our health care system to function effectively in institutions, in offices and clinics, and in patients' homes, it is important for all of us involved in this system not only to keep those professional skills that we have gained in our formal education up-to-date in this time of rapid scientific and technical advances, but to add new skills in order to meet the challenges of the future in a satisfactory and satisfying manner. I wish to emphasize "satisfying" because personal satisfaction is important to all true professionals.

Before leaving this question we should remember that there are often advantages—too frequently overlooked—of continuing the education of the several health professions in concert, as a team, rather than in isolation.

Continuing Education for What?

The obvious answer to this question may seem to be, "To keep up-to-date," but it is really much more

complex than that. It is, of course, obvious that we cannot provide health care in an efficient and effective manner in this period of rapid proliferation of information, techniques, and equipment if each of us does not continually apprise himself of developments appropriate to his own functions. One purpose of this obviously is to be in a position to render opti-

Continuing education should be for all workers in the "health care team" for many public and personal purposes by all individuals, institutions, and organizations concerned at practically all times and in nearly all places employing the entire spectrum of educational methods. A stupendous job!

mum service in the prevention of illness and in the care of the sick, but optimum performance in the health care system also requires that a health professional take satisfaction in his work and have pride in his competence. It is not enough to go mechanically about one's job from day to day, and it is probable that hospitals and other institutions would find fewer professionals leaving the system if more attention were paid to this factor. This leads to another important consideration: the logical consequence of good staff development enables a person to better his professional and financial position thereby increasing his usefulness to society and his satisfaction in his work.

Continuing Education by Whom?

Self-education by health professionals is of primary importance, but only at the highest professional levels can this be expected to be at all effective, and it needs to be stimulated by institutions and professional organizations at all levels. In spite of the very casual manner in which some academic institutions view continuing education, it is the confirmed opinion of nearly all who have examined the problem that the schools and universities that provide the basic professional training for persons in the health professions also have an obligation in continuing education. Kansas can be proud that its School of Med-

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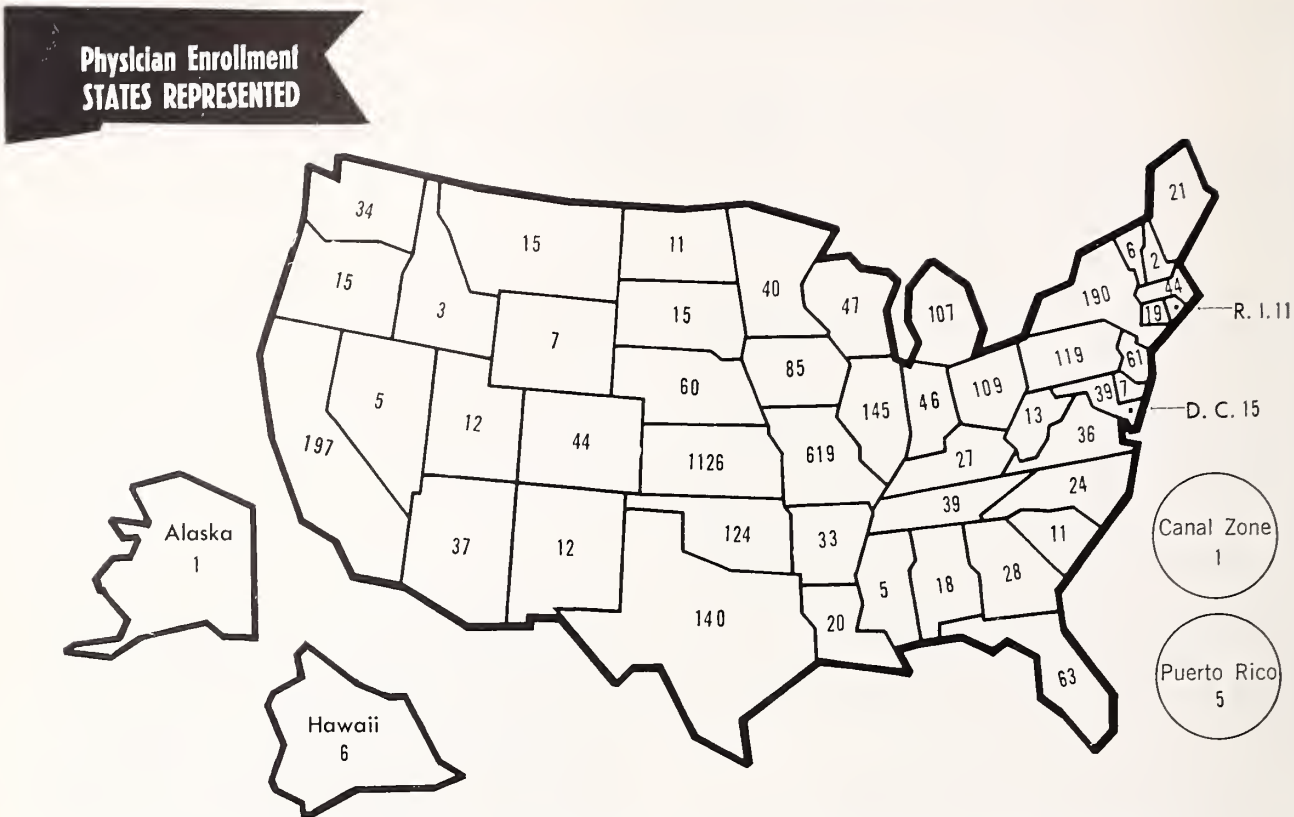


Figure 1. Map showing distribution of physician enrollments for the academic year 1968-69.

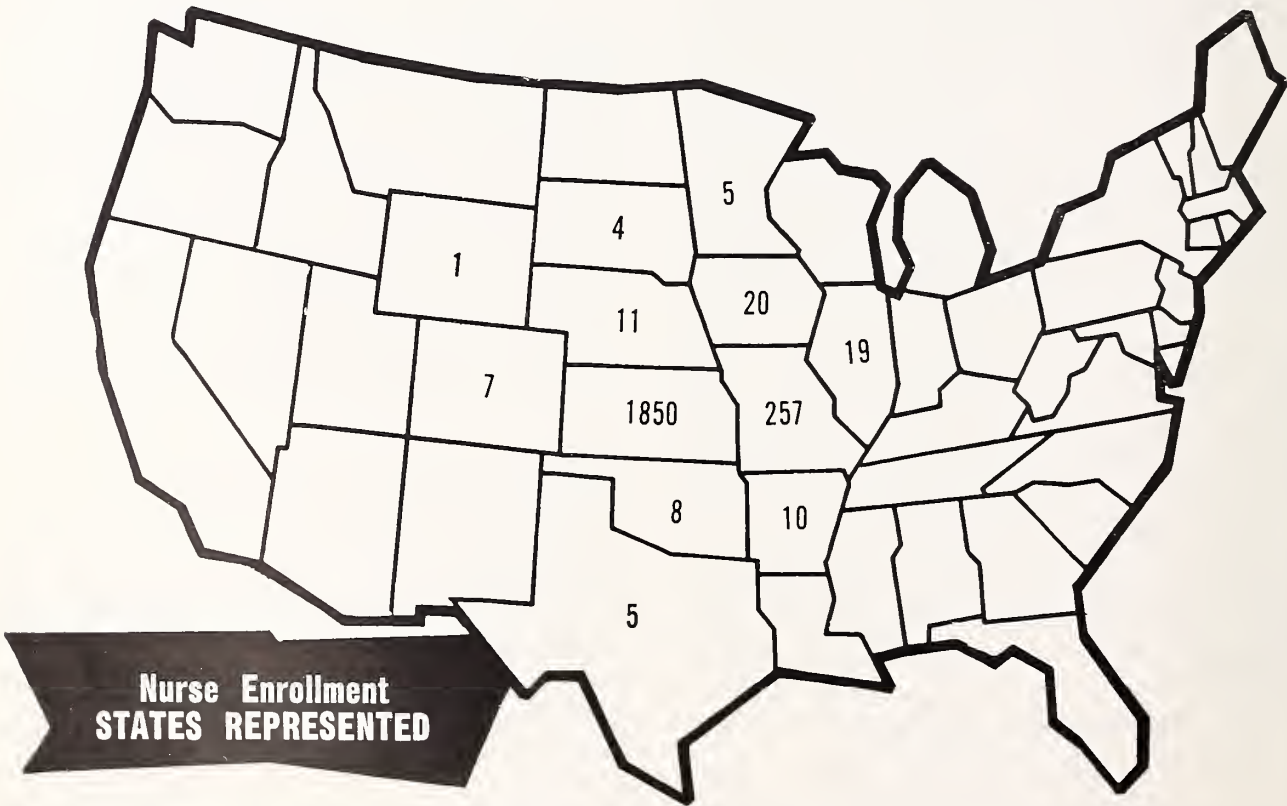


Figure 2. Map showing distribution of nurse enrollments for the academic year 1968-69.

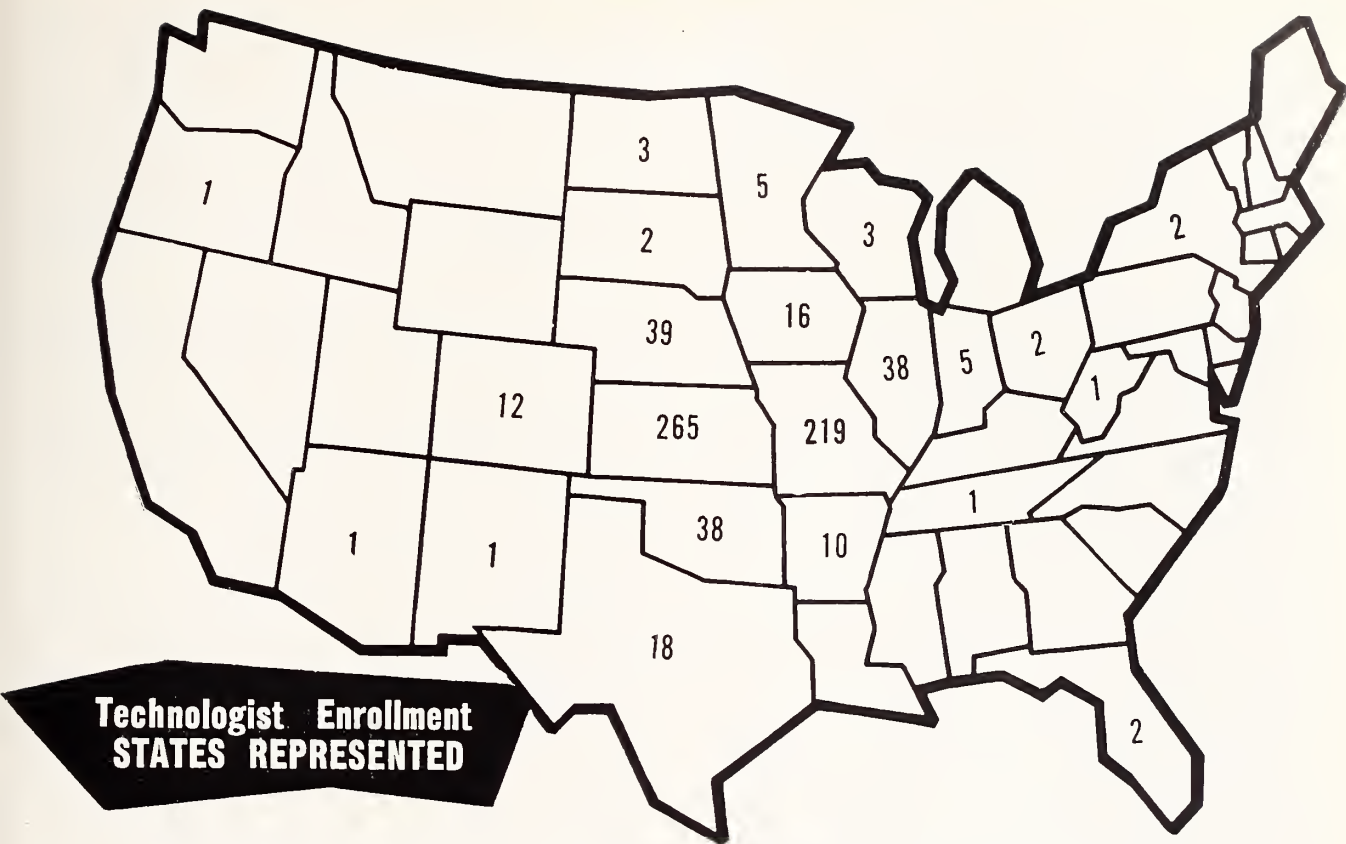


Figure 3. Map showing distribution of technologist enrollments for the academic year 1968-69.

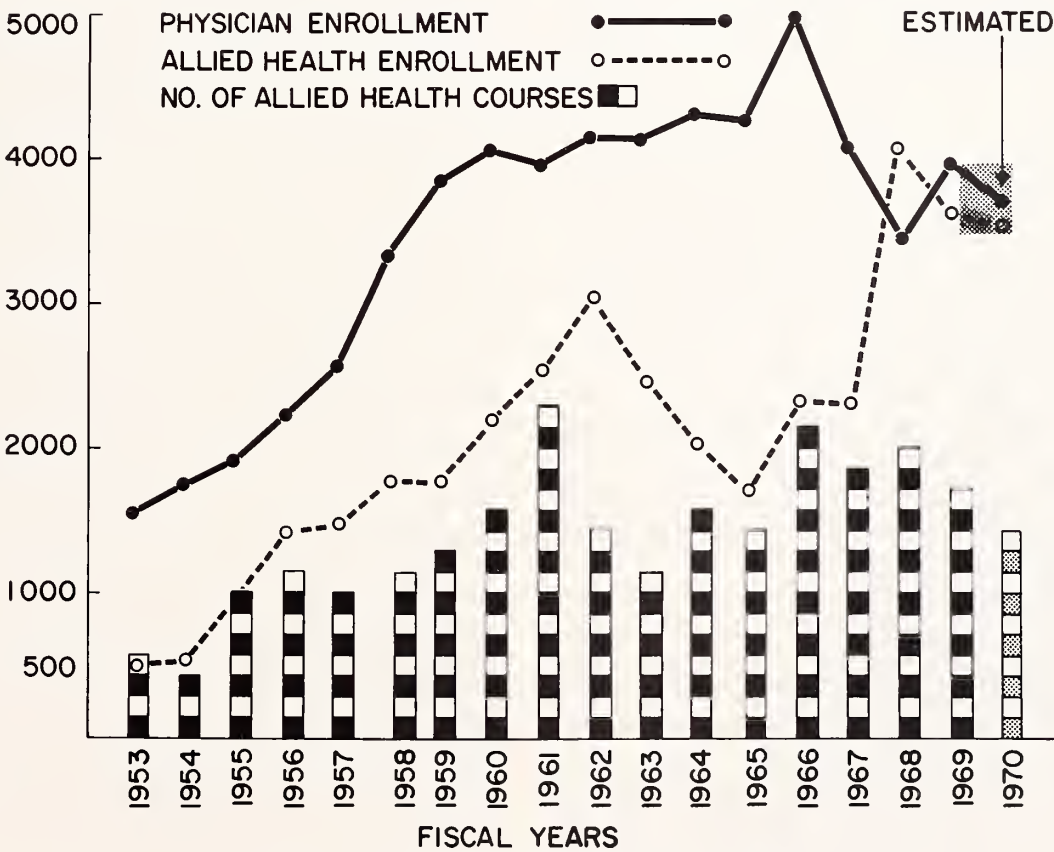


Figure 4. Summary enrollment graph for 1953-70.

icine has a long history of serious efforts in this field (*Figures 1, 2, 3, and 4*), and I am pleased that an increasing number of schools are consulting with us to find how they can increase their involvement. We can hope that the time will come when all such institutions will give this phase of professional education its just due. Even if they do, however, it will not be enough, because continuing education to be really effective must actually be *continuous*. This means that it must be part of the daily life of each health professional—in his hospital, his laboratory, his library, his office, and his home.

Since the hospital is the "workshop" of the majority of persons in these professions it is fair to emphasize its role in continuing education. In most such institutions continuing education is sporadic, if not spasmodic, and is largely entrusted to persons whose *primary* responsibilities occupy both their time and their intellectual competencies elsewhere. If a serious effort is made in any way it is usually an "in-service" program that is related to the activities of nurses, aides, and orderlies.

Hospitals that have the personnel and facilities to carry on a reasonably complete continuing education program should employ a professional educator whose *primary* responsibility is the continuing education of *all* of its workers and who can devote full time to a determination of educational needs and to stimulating—if not actually carrying out—appropriate programs to meet these needs. Hospitals of lesser capabilities would do well to associate themselves with other hospitals of similar size and educational requirements in order to secure the services of a competent educator to function for the whole group in a fashion similar to the educator in a larger hospital. Such groups of hospitals could find it useful to arrange for visiting consultants to update their personnel on the latest concepts and coach them on new procedures and equipment.

Continuing Education, Where?

By now this question has been at least partially answered. It would not be amiss, however, to re-emphasize that continuing education in the broadest sense must go on wherever the health professional is, and this quite obviously includes, for most of us, the hospital and the home. In these locations self-instruction as well as formal conferences and programs are necessary. We shall soon look at the question: Continuing education, how? Most of us doubtless think of symposia, seminars, conferences, and workshops—all of them more or less classifiable as "courses"—but upon closer examination we become aware of the fact that the most important education occurs in small bits in informal situations, and at unscheduled times. For this reason each health professional and health educator would do well to look into these mat-

ters with the object of facilitating this sort of "bite-size" education. The hospital or staff coffee shop probably is the locus of more really productive educational activity than any other place in the institution, and it might be well to look into the development of self-instruction centers and coffee bars as units. The library is, of course, the logical focus for a self-instruction center. I can imagine the horror with which most traditional librarians would contemplate the intrusion upon their sacred precincts of coffee and snacks, but it would probably be advantageous to all others concerned if this could come about.

The individual's home, when he has been appropriately stimulated on his job, will increase in importance as a place for continued study.

Continuing Education, When?

Now the answer is simple: "All of the time!" There should be no arbitrary division between work and education, and institutions employing health professionals should recognize this even to the point of continuing one's salary during times of learning—or at least some of the times of learning—during which the employee is not actually performing the formal tasks in the service of patients at the bedside, in the laboratory, or wherever.

Continuing Education, How?

Continuing education is far too often thought of as so-called "courses" or "workshops," but we really need to stress the importance of having the method fit the time, the place, and the person. Continuing education must be relevant to be effective, and for that reason it should occur not only at the time and the place in which it is relevant, but it also should be done in a manner appropriate to the situation. Most institutions, if they give any consideration at all to continuing education do so by means of an "in-service" program that is sometimes more of a gesture than an educational activity. The next step, if they want to do a "serious job" of education, is to plan conferences, seminars, symposia, workshops, or courses. These methods of education are important, and have a place, but that place is usually either in an academic institution, a larger hospital that serves many professionals from the larger community, or as a part of the program of the major professional societies. Smaller institutions are also tempted to employ these modalities at the cost of much money and effort, and usually to their own frustration. They are attempting to do what larger and more generalized institutions are better equipped to do. If they would expend the same amount of time and effort in doing the important tasks that are *impossible* for the larger institutions they would have infinitely more satisfaction and success.

KUMC Television—

—Two Decades—1949 to 1969

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TWO DECADES have passed—twenty years and a lot of mileage—since television was first introduced at the University of Kansas Medical Center. Back in 1949 there was promise in this medium. It appeared that it might bring to the area of medical education and patient care a new dimension. It has, in fact, done that; but in the doing it has also brought many problems and some questions.

During the past 20 years most of these problems and questions have at one time or another confronted the television activities at the University of Kansas Medical Center. They range from equipment that wouldn't work to people who couldn't conceive—the full gambit from hardware to people and back. Back in 1949 KUMC was the first medical center in the country to have permanently housed within its facilities color television for the purpose of instruction. In 1965 Kansas University Medical Center, once again, was the first medical center in the country to have a live, two-way, simultaneous microwave-television link between its facilities in Kansas City and the parent campus in Lawrence.

Now starting our third decade, what have we accomplished and where do we stand? Have some of those promises from 1949 become a reality? What is yet left to be done? What is the "state of the art" of television in medical education and patient care at the University of Kansas? But perhaps even more importantly is another question: What does the past 20 years and the present status of television at the medical center mean to you, the physician of the state of Kansas? Let's explore these points in some detail and perhaps shed a little light on some very hard realities about a very glamorous and highly promising medium—television.

Twenty years ago, in 1949, and for approximately ten years thereafter, the application of television in the fields of education, and no less in the field of medical education, were fraught with the problems of the "state of technological art." The manufacture of appropriate equipment that could be applied in a highly flexible manner, such as educators required, and the competent personnel to operate the complex hardware were not available. Hence, one of our first realities was that we were involved with television at

its stage of infancy and for ten years struggled with clumsy equipment, at that time the best available, and applied in highly experimental manners this system called television in many diverse areas of educational activity. But again and again the complaint came back from students and physician/instructors alike: too much light; the equipment doesn't seem to work as it should; I'm not satisfied with this or that. In fact, in retrospect, one might have to say that

It has taken the better part of two decades to begin to realize some of the promise that farsighted folk back in 1949 saw for television. Our next 20 years will be filled with many accomplishments and some failures, fewer we hope than the first twenty. We can only hope that they will be as fruitful and enlightening as the first two decades have been.

television was not ready for the medical center nor was the medical center ready for television in 1949.

By 1959 significant activity was afoot in the area of manufacturing of electronics equipment aimed at the market of education. We began to see some headway, some daylight, the mountain was coming to Mohammed. But here in Kansas City, half way between the East and West, the mountain moved in very slowly. Trial and error, modify, change and try again, probe new areas, new areas of application, new methods of acquiring, different techniques of disseminating were the paths we trod. The video tape recorder finally became a reality economically for the area of education around 1964. No longer were we held to the live observation situation. Now we could store some of those classic moments, those special cases that only come along once in a while. Another dimension for confusion was thrust on the scene: "Jargoneese," the I.O., the vidicon, helical scan, one inch, two inch, plumicon, color, black and white, monochrome. A whole new lexicon was developing. As this lexicon developed, along with the technology, a new breed of people were emerging from institutions around the country—people who

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grew up just prior to the advent of television in education, but who saw and grasped its potentials and its possibilities. These people began to staff Kansas University Medical Center. Again, time and money, but more importantly legitimate applications for the expertise and sophistication of the people, the technical people, and the system, television, still could not be applied to realize significant utilization. The reason here perhaps was due essentially to the first ten years of television at KUMC. Many instructors had been burned by a giant, cumbersome, difficult system. They were reluctant to try again. They had to be shown in no uncertain terms that *they* could master the system and the techniques and utilize a medium like this to the benefit of their students and the patients those students would serve.

Needless to say, by 1959 the color television system of ten years before was ready for the archives. A cold tubed, obsolete monster that had been outstripped by the rapidly changing area of electronics technology. The various trial and error equipages and applications had left KUMC with a large polyglot of various television equipment. From this collection of gear needed to be drawn some real, usable consumption. This was a problem conceived early, new direction as well as a new name, the Department of Communication Services. By October of that but efforts between 1959 and 1965 were somewhat stymied, perhaps because of the first ten years, the negative experiences and the usual monetary problems.

In 1965, in an effort to revitalize the use of television, the medical center became the first in the country to own and operate a live, two-way microwave-television link between the medical center and the parent campus at Lawrence. This system was described in the JOURNAL in March, 1967, Vol. LXVIII, No. III, pages 90-95. In 1967 the Department of Medical Communications, which had housed the television operations, took on a new look and a same year, a new application attendant to the microwave system, the distribution and acquisition network, was completed and became operational. One network was located at the medical center, the other at the Lawrence campus—at each end of the microwave.

The concept behind the distribution system was a simple one. Instead of requiring instructors, patients and students to go to one of two or three possible locations where they might have access to the microwave, this distribution/acquisition network would go to them; to the site of the action. Also, it demonstrated the applicability of planning ahead. The design of this modular operationally modifiable system was predicated on the ever-changing demands of medical education and patient care. A system that would not soon be obsolete even though the "state

of the art" in electronics technology was now speeding along at such a fantastic rate that equipment was actually becoming obsolete before it could be purchased. This modular system of distribution and acquisition resulted in a number of immediate, positive, measurable elements: (1) it reduced the duplication of equipment significantly, thereby reducing cost; (2) it made better use of available manpower and created a funnel through which all television signals would be fed to all locations whether they were on the medical center campus or the Lawrence campus, or both; (3) it significantly expanded the number of usable areas where an instructor or student could have access to the system; (4) the implementation of the distribution and acquisition network stabilized the technical operations in the succeeding two years to a present level of 99.99 per cent operational reliability, meaning no lost programs due to equipment malfunction; (5) with operational reliability, primary effort was then placed on developing the utilization of television in a broader range of academic areas; (6) a brief statistical look at the results beginning in 1967. In the academic year 1967-1968, 1,028 hours of instructional time occurred within the television facility involving 13,529 viewings. This programming came from 26 different departments within the medical center and the Lawrence campus. In the academic year 1968-1969, there was an increase of 35 per cent in time committed—1,388 hours—and an increase in viewings of 27.5 per cent—17,256—with an increase in the number of using departments to thirty-six. For the academic year 1969-1970, conservative projections show an expected increase in time over the '68-'69 period of 40.6 per cent, or a total of 1,951.8 hours, and an increase of personnel viewings over '68-'69 of 53.7 per cent, or 26,526, now involving 39 departments within the medical center and the Lawrence campus. During the 1968 period, approximately one third of the total traffic was via microwave. In 1969 about 34.5 per cent was microwave traffic. This year (1970) we project approximately 42 per cent for microwave traffic between the two facilities. Let me note at this juncture that available figures for 1966 show a total commitment to television of approximately 680 hours with no actual headcount of viewings, but a rough "guesstimation" might lead one to believe that the facilities accommodated between 7,000 and 8,000 viewings with less than 10 per cent occurring on the microwave system.

In 1967, when the Department of Communication Services was formed, two goals were placed at the head of the list: (1) to provide practical problem-solving in the area of communications technology as one of the many avenues available to meet the needs

of the medical profession, continuing education and ultimately the improvement of patient care; and (2) to demonstrate the applicability, feasibility and desirability of a planned, integrated communications complex capable of modular operational modification predicated on the constantly changing needs of the medical community, its faculty, physicians and students.

The above statistics reflect active implementation of the methodology necessary to accomplish those goals. We have, in fact, only begun to really apply television in the field of medicine. As a note of interest, the curriculum revision plan submitted to the University Board of Regents and passed by them included a complex of two-way television systems to interconnect those affiliated hospitals with the new program approach of Kansas University Medical Center for the training of physicians in and for the state of Kansas. This part of the plan was based on the successful demonstrations that have been realized in the past three years at Kansas University Medical Center. In other words, we have ironed out the bugs to enable us to deliver the appropriate signals anywhere a network goes, to anyone wishing to get into the network for whatever his reason. The geography and population variance of the state of Kansas is an excellent field in which to approach in a conservative yet imaginative way the concepts of communication technology as related to both the health care and public communities, to the physicians in western Kansas, in solo practice, in the small towns and in the metropolitan areas. Kansas could very well be a prototype in its approach to realistically solving the problems of interfacing the somewhat complex communications, electronic instrumentation in the practical, everyday problem-solving faced by the physician. This will require a continuing effort in the area of experimentation, innovation and implementation; but definitely not at the expense of delivery to the consumer/physician or any other member of the allied health care team and ultimately the patient. The information so needed, consultations so urgently desired, information on advances in those areas of specialty still hidden in medical research and so slow to become general knowledge but yet so important to you, the physician, and to your patient's health, can be brought to all the communities of Kansas.

Communications technology, of which television is one part, can and most surely must play a small but important role in accomplishing these objectives. What has been done in the past 20 years at KUMC has been to lay a foundation on which a realistic, applicable, flexible and delivering system can be built. Are the people of Kansas entitled to less than the best we can offer them through whatever mech-

anism? Medical television can take its place along with the "circuit riders," the journals and all the other methods available to all of us in the accomplishment of these goals and objectives. The time is now. The place is Kansas. We are the people to do it, the physicians and the technicians.

The Dean's Report

(Continued from page 68)

training means that we are talking about between nine and ten years from the date the first funds are made available for increase in class size to the time when the given student would enter the practice of medicine. Relatively modest sums have been requested to achieve what are essentially, short range and long range approaches to the problem of shortage of health care personnel, especially in the state of Kansas.

Problems to be faced in the future are by no means simple. Student fees, patient charges, revenue bonds, other types of loans, federal appropriations, state appropriations, private gifts and grants and support of alumni will have to be studied carefully before projections can be made. It is quite clear that high quality educational programs in the future will not be obtained unless people are willing to pay for them. However, it is abundantly clear that no one source of funds will be able to accomplish the objectives. We must not be misled by the availability of federal construction funds in the future unless funds for the operating support of the programs are visible.

Increasing the educational opportunities for health personnel obviously is not confined to candidates for the M.D. degree. There are many other needs which must be met by health educational programs in the state of Kansas. It is important that appropriate tasks be taken on by appropriate institutions. In addition to this, consideration must be given at length to training of so-called physicians' assistants and others who are apparently not among the normally recognized health professionals.

It is important in future planning that the professionals and the consumer be heard from. At the time this article is published, the response of the Legislature will be known, but I am pleased to report that it is already evident that the Kansas Medical Society and the Kansas Academy of General Practice are concerning themselves with the important issues before us to which this proposed legislation in part speaks.

Clendening Medical Library

Current Extramural Activities

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Midcontinental Regional Medical Library Service

AFTER MANY MONTHS OF PLANNING, the principal medical libraries in the seven states of Colorado, Kansas, Missouri, Nebraska, South Dakota, Utah, and Wyoming have received word that the National Library of Medicine has given approval to their joint request for the establishment of a Regional Medical Library Service in this area, designated as the Midcontinental Region. The working arrangement is a consortium, recognizing that several libraries of approximately equal size are found in the region, with strong programs for their own states or subregions, but there is no one library yet adequate to assume the entire burden of a regional center.

Designated by common consent as the physical location and responsible fiscal agent for the consortium is the medical library of the University of Nebraska School of Medicine, Omaha. Nebraska is about to complete a new library atop its basic sciences building, giving ample space to accommodate headquarters and potential growth in essential, but lesser-used, informational materials for the region.

An advisory committee for this Regional Medical Library Service includes the chief librarians of the largest participating institutions, representatives from the faculties of those institutions, the seven Regional Medical Programs within the area, and user groups. William L. Valk, M.D. (Chief, Section of Urologic Surgery, University of Kansas Medical Center) and Robert W. Brown, M.D. (Coordinator, Kansas Regional Medical Program) were among those present at the committee's organizational meeting in Denver, July 25, 1969.

Leading to the request for grant support from the National Library of Medicine were a year and a half of increasing activity by the medical librarians of the proposed region, one of eleven within the nation, who organized as the Central States Regional Medical Library Group. One solid accomplishment of the group, in addition to calling attention to the need for the regional medical library (RML), was the compilation of the Central States Union List of Serials.

Showing the holdings of biomedical journals at eight of the largest medical libraries among them, this computerized list was edited, keypunched, and run under contract by the Medical Library Center of New York, an experienced and well-staffed leader in this field. Presently it is available in computer print-out format at the eight participating libraries, including Clendening Medical Library, which contributed the necessary share of funds to start the list. It already permits more efficient sending of photocopy requests to a known holder of a title needed within the region. A printed, revised edition for wider distribution will be an early activity of the new Regional Medical Library.

Also to be assumed by RML is financing of the MEDLARS (Medical Literature Analysis and Retrieval System) regional search center at Denver, which will continue to be administered by the University of Colorado Medical Center. Its regional boundaries now coincide with those of the Midcontinental Regional Medical Library.

Physicians in Kansas benefit indirectly from Clendening's participation in these information organizing activities outside the state. But they derive direct assistance from Clendening's cooperation with a library network within the state.

The Kansas Medical Library System

From its beginning, the Kansas Regional Medical Program has included library service based upon the collections in Clendening as one of its activities. This type of service has not necessarily been present in all Regional Medical Programs, although several have found, as KRMP did in its initial planning, that speeding up the transfer to medical information from its places of origin to the places of application for better patient care implied improvement of the existing pattern of biomedical library service. (It might be useful to note that, despite their similar sounding names, Regional Medical Libraries and Regional Medical Programs are different entities, derived respectively from Public Laws 89-291 and 89-239, the Medical Library Assistance Act of 1965 and the Heart Disease, Cancer, and Stroke Amendments of 1965, with administration by different units within the Public Health Service.)

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Kansas had not only an initial advantage of early KRMP interest in improving biomedical libraries, but also a continuing benefit from the fact that the KRMP boundaries coincided with those of the state, making it easier to develop a state-wide library program under its auspices. KRMP has concentrated on upgrading services while using existing collections. It has sometimes assisted in upgrading those collections, but it has refrained from any attempt to build yet another library.

Clendening Library has become the host for KRMP's Office for Library Services (OLS). The executive director of the OLS, Mrs. Desi Bravo Schaffer, recently described the growth of that operation from a limited service to the staff of KRMP in Kansas City and Great Bend up to the present, when her office coordinates a state-wide biomedical information network.¹ Depending upon the extensive collections of journals and books in Clendening, the OLS has greatly increased the availability of those materials to the physicians and other health professionals of Kansas.

Even before the approval and funding of the Kansas Medical Library System in June 1969, the number of articles supplied as photocopies to other libraries and individual requestors in the state by OLS, when added to Clendening's volume of interlibrary loans and photocopies supplied in lieu of the originals, raised the total of 2,693 items for fiscal 1967-68 to a record high of 6,303 for 1968-69. This represents an increase of 134 per cent over the previous year. The OLS was responsible for 43 per cent of the latest total. The 57 per cent attributable directly to Clendening (3,585 items) was, in itself, one third greater than the previous year's entire figure. Clendening, by being able to depend on the allied OLS for state-wide service, has been permitted to offer expanded services to meet regional and national requests.

The Medical Center Library (which became the Clendening Medical Library in 1957, when its present building was completed) has continued its growth from 50,000 volumes in that transitional year, through 90,000 in 1965, to 104,000 in 1969.^{2, 3} It remains the strongest medical resource within this state. However, it shares the service load with other medical collections in Kansas, also growing and linked together now by the KRMP Office for Library Services into the Kansas Medical Library System. Other network nodes, serving their surrounding areas, include the Wichita State University Biomedical Library, Stormont Medical Library at Topeka, and the Central Kansas Medical Library at Great Bend. For materials not immediately available in local collections, Clendening acts as a resource for the entire state.

Gifts and Exchanges— Turning Lead Into Gold

In addition to the increases noted in interlibrary lending, there has been an upsurge in the traffic of gifts and exchanges passing through Clendening Medical Library. On the international level, the Kansas Medical Society, by exchange of its *JOURNAL*, is responsible for providing Clendening with continuing receipt of many foreign medical titles, deposited here after editorial scanning is completed.

The Journals Overseas Project, now sponsored by Sertoma, continues to send gifts and duplicates to requesting libraries through the Smithsonian Institution, which reships the journals to their ultimate destinations throughout the world. Nationally and internationally, Clendening participates in the Medical Library Association Exchange, which brings items needed to fill gaps caused by nonreceipt or loss. Lists of available duplicates are prepared and the resulting requests are honored by this library as one of the obligations of Association membership. Regional exchange of nonduplicate, but fragmentary, runs of periodicals, in order that they may be consolidated at the location of the most complete set, has been facilitated already by the Central States Union List of Serials.

Within Kansas, the same redistribution of duplicates and titles with a variable potential for use has been organized. Gifts which formerly were turned away when not needed by this specific library are presently accepted, listed, and shelved. The resulting files, available equally to the redistribution services just described, also serve to replace missing and worn-out issues in Clendening's files. The Kansas exchange is made practical by the communication of gaps and discards through the Kansas Medical Library System. For actual redistribution, another cooperative organization in which Clendening participates has given aid with the transportation.

Kansas Academic Librarians' Council

In addition to serving the hospital staff needs of the University of Kansas Medical Center, Clendening Medical Library supports the educational program of the School of Medicine. In the common division of libraries into four types (public, school, academic, and special), it does not fit neatly into one, for it shares characteristics of both the academic and special types. It shares the academic orientation of the libraries at the other six campuses administered by the Kansas Board of Regents. Each of the institutions, which include (besides the University of Kansas and its medical center) Kansas State University, Wichita State University, Fort Hays Kansas State College, Kansas State College of Pittsburg, and Kan-

sas State Teachers College, Emporia, is represented by its chief librarian in a semi-official organization called the Kansas Academic Librarians' Council. It is this group which sponsored the *Kansas Union List of Serials* (Lawrence, 1965), which has served much the same purpose as the Central States List for more general publications held by this group of Kansas libraries. The Council has encouraged each of its members to install teletypewriters for more rapid exchange of interlibrary loan requests (as does the Regional Medical Library Service for its special library network).

But the most useful result of KALC cooperation has been the jointly-supported courier service, which has contributed greatly to the success of the Kansas Medical Library Network in arranging for the transportation of books and journals for loan or exchange between the libraries of Kansas City, Topeka, and Wichita. The courier service consists of a staff member of the Kansas State University Library, Manhattan, who drives three days a week to Kansas City and back the same afternoons. On the intervening Tuesdays and Thursdays, he makes trips to Wichita. Stops along the way in Topeka, Lawrence, and (on the alternate days) Emporia, permit rapid distribution of library and educational materials between the state schools. The office of the Kansas Medical Society is a frequent stop. A cooperative relationship with the Linda Hall Library of Science and Technology, the world-renowned special collection located in Kansas City, Missouri, allows all the schools to draw on the extensive holdings of this privately-endowed library.

Recognizing that students and faculty of all these schools have occasional need and opportunity to visit and use the libraries at the other campuses, the Kansas Academic Librarians' Council made a public announcement at each campus in December, 1969, that evidence of current registration or appointment from any of the state-supported schools was the only identification necessary to receive the same services as the local users of each library. This gave formal acknowledgment of what was generally true before, but which may not have been well known. In this, as in other ways, Clendenen Medical Library is attempting to broaden its concept of service, both to provide as much as it can and to benefit from all that is available, as an active unit within the interlocking networks that have been described.

References

1. Schaffer, Desi Bravo: "Kansas Regional Medical Program Library Services," speech prepared for the Medical Library Association Annual Meeting, Louisville, Ky., October 26-30, 1969. Mimeograph copies available from the Author.

2. Cavanagh, G. S. T.: The medical center library: Physical properties and service potentials. *J. of Kansas Med. Soc.* 58:148-149, 1957.

3. Kron, Irvin W.: Growth and modernization—Clendenen medical library: An emerging information training center library. *J. of Kansas Med. Soc.* 67:163-164, 1966.

AMA ESTABLISHES NEW DEPARTMENT TO STRENGTHEN SPECIALTY TIES

The American Medical Association established a new headquarters staff department January 22 to strengthen liaison and services to related medical organizations. It is the Department of Specialty Society Services, reporting directly to Richard S. Wilbur, M.D., assistant executive vice president. Department Director is Theodore R. Chilcoat, Jr., a five-year staff member formerly assigned to the AMA Washington Office.

The Department will serve and implement the directives of the Interspecialty Committee which was created in 1966. On the same date, January 22, Ernest B. Howard, M.D., AMA executive vice president, announced that Doctor Wilbur was appointed secretary of the Committee, succeeding Hugh H. Hussey, M.D., who was appointed director of the AMA Division of Scientific Publications and editor of the *Journal of the American Medical Association* January 1.

Commenting on the new appointments, Doctor Howard said, "The establishment of this special department is an important step in strengthening AMA's relationship with the specialty societies, and it is the culmination of a long range program undertaken to upgrade the services of the AMA to the specialty societies.

"After the founding of the Interspecialty Committee, the House of Delegates appointed an Ad Hoc Committee to Study the Modus Operandi of the Sections of the House of Delegates. Its report called for the creation of a group of section councils to provide specialty societies with direct representation in the AMA House of Delegates. The report was adopted in July, 1969.

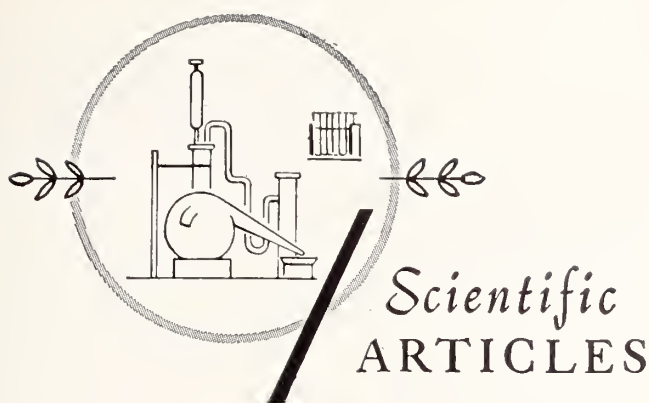
Its specific recommendations were to:

- "Establish a mechanism for stimulating increased cooperation between the specialty medical societies and the AMA, thus forging a relationship that will bind specialty societies and the AMA closer together, generating a singleness of purpose which will benefit all of medicine;

- Give more satisfactory representation in the House of Delegates to the specialty organizations;

- Provide for an increase in experience and competent manpower to assist the Council on Scientific

(Continued on page 84)



Gas Gangrene:

The Spectre Still Looms

MELVIN D. ROBERTS, M.D., and
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GAS GANGRENE PERSISTS as a serious complication of severely contaminated wounds. This unwanted and oft-times preventable disease can strike with alarming swiftness and may be lethal.

Hippocrates¹ is given credit for being the first to recognize the existence of gas gangrene. Historically, gas gangrene has been a disease of man's armed conflicts. It gained enough importance during the 18th and 19th centuries to command the attention of such famed investigators as Pasteur, Welch, Larrey,¹¹ Kirkland, Novy, and Robb-Smith.¹ Fortunately, gas gangrene is uncommon in civilian practice; however, enough cases are still seen as a complication of trauma, surgery, or vascular insufficiency to justify serious consideration of methods available to reduce the high morbidity and mortality.

The inciting agents of this disease process are a group of gram-positive anaerobic spore forming bacilli of the genus *Clostridium*. The species known to be pathogenic to man are *Clostridium perfringens*, *novyi*, *septicum*, *sordelli*, *histolyticum*, and *fallax*.⁹ These ubiquitous organisms are common inhabitants of soil, water, and the alimentary tract of most animals. Clostridia grow only under anaerobic condi-

tions in a suitable medium such as dead muscle. Their spores are usually wider than the diameter of the large rods and may be located centrally, subterminally, or terminally. The clostridial organism produces disease in man by finding an anaerobic en-

Patients with gas gangrene, a disease not commonly seen in civilian practice, frequently suffer from delayed diagnosis and improper treatment. The disease occurs with enough frequency that a review of its prevention, etiology, pathophysiology and treatment seems merited.

vironment and reduplicating. In the process it produces soluble toxins that have the power to destroy blood and tissue cells² (*Figure 1*). Most of these toxins are felt to be enzymes and include varieties of lecithinase, collagenase, hyaluronidase and proteinase. These toxins have the ability to invade and progressively destroy muscle while producing profound effects on man.

Clostridial infections fall into three categories. In simple contamination, the clostridial organism is cultured from the wound, but there is no clinical dis-

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MODE OF ACTION OF CLOSTRIDIA

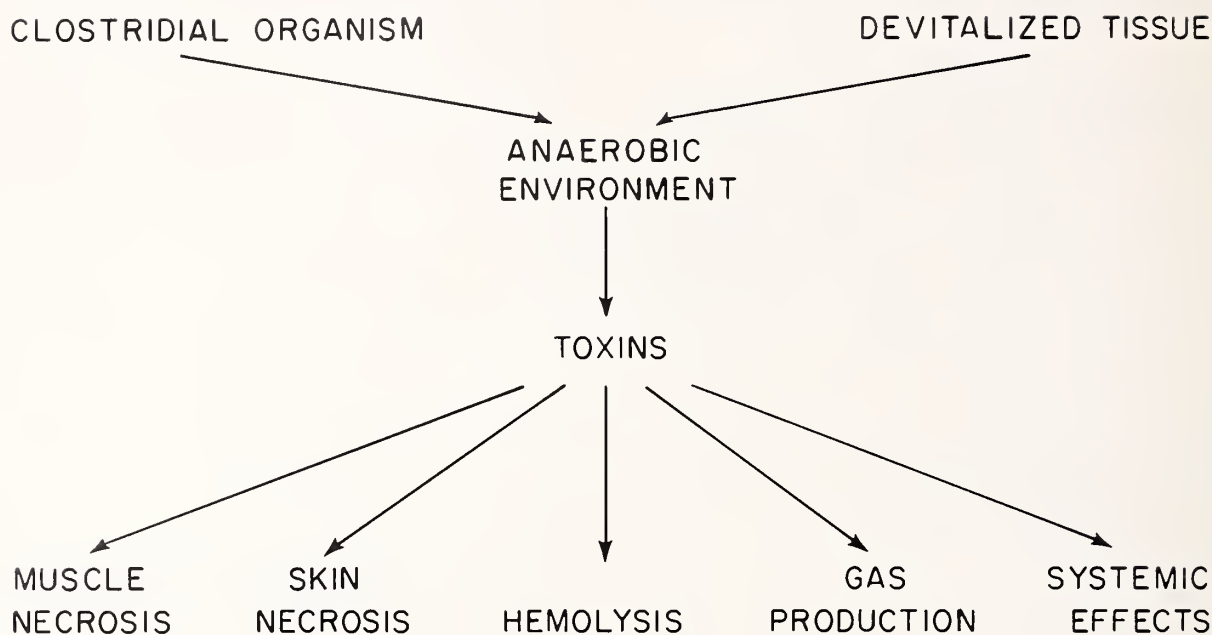


Figure 1. The mode of action of the clostridial organism in devitalized tissue.

ease. In anaerobic cellulitis, there is clinical evidence of disease with no dead muscle; little toxin production occurs. In anaerobic myonecrosis, the clostridial organism is present in dead muscle; there is considerable toxin production, fulminating tissue breakdown, and severe clinical disease. The clinical distinction between these classes is not always clear. In fact, myonecrosis rarely exists without some evidence of cellulitis.

The incubation period of gas gangrene is short. Early symptoms are frequently present 12 to 24 hours postinjury. Gas gangrene manifests itself initially by the sudden onset of severe pain in the region of the wound. This pain may increase in severity, but does not radiate. Early, there is local swelling and edema that becomes marked and may involve the entire extremity. Associated with this, the skin may become tight, bronze-colored and form bullae that contain dark-colored fluid. There is frequently soft tissue crepitation. The wound exudes gas bubbles and seropurulent material that has variously been described as having a "sweetish" or "mousey" odor. The patient's vital signs show tachycardia with a low grade febrile response, unless there is a mixed infection present. The pulse is thready and the blood pressure can fall precipitously. Patients with gas gangrene exhibit unusual mental states: they may be alert, have an overwhelming fear of personal disaster, or appear listless.

The ideal treatment of gas gangrene is prevention. Adequate early debridement of a severely contaminated wound is the key to this form of therapy. Layer by layer inspection of the tissues with the elimination of necrotic material, foreign bodies (especially organic material) and large dead spaces is imperative. Primary closure of a severely contaminated civilian wound continues to be controversial. We feel this decision is a matter of judgment and can only be made by the operating surgeon. We close these wounds if closure can be accomplished without undue tension and we can have reasonable assurance that the wound is clean and the dead space eliminated. If not, the wound is packed open and closed by secondary methods. Immediately after being seen, these patients are placed on parenteral antibiotics for three to five days. The antibiotic of choice is aqueous penicillin G administered in divided doses for a total of 20 million units a day for an adult. Secondary drugs of choice include broad spectrum, preferably bacteriocidal agents that are effective against streptococcal and staphylococcal organisms.

The diagnosis of gas gangrene is made on clinical findings and can only be made early if one has a high index of suspicion. Excessive pain in the wound, tissue swelling, crepitation, tachycardia, mild fever and apprehension support the diagnosis of gas gangrene. A gram stain of the wound showing gram-positive spore forming rods is helpful. X-rays reveal-

ing gas in the soft tissue are supportive, but non-specific, as are early changes in the peripheral blood counts.

The treatment of gas gangrene should begin with its diagnosis. Immediate measures should include adequate parenteral fluid therapy to replace the large extracellular fluid volume loss and blood volume deficit.⁵ In addition, parenteral antibiotics are started at once. Again, aqueous penicillin G, 20 million units a day in divided doses is used for adults. Secondary drugs of choice include the newer semi-synthetic penicillins, or the tetracyclines.

Since June 1967, we have seen five cases of gas gangrene at this hospital (*Table 1*). There were three males and two females; their ages ranged from 7 to 31 years. These patients were injured by various means, but all had open fractures with extensive soft tissue damage that had been severely contaminated with dirt and organic debris. They had received their initial treatment 48 hours to six days prior to being transferred to this hospital. Prior to arrival here, all patients had undergone initial debridement and primary closure of the wound with plaster immobilization. These patients had also received tetanus immunization and some type of antibiotic therapy. On admission to this hospital all of these patients were started on parenteral fluid therapy and intravenous

aqueous penicillin G. Following a gram stain, x-rays, and basic blood studies, these patients were taken to the operating room for debridement. Three cases were treated by open amputation in an effort to control the gas gangrene; two cases were treated by wide local excision of the involved tissue mass. All but one of the patients in this series responded promptly to this form of therapy. The one patient that did not respond promptly was transferred to another institution for hyperbaric oxygen therapy. In spite of the hyperbaric oxygen treatment, this patient did not survive.

The traditional approach to gas gangrene management has been radical surgical debridement of the devitalized tissues.^{1, 10} This therapy frequently included amputation of a limb or filleting of an extremity. Brummelkamp, *et al.*,³ first reported excellent results with hyperbaric oxygen therapy for the treatment of gas gangrene in the early 1960's (*Figure 2*). Since that time, numerous investigators,^{4, 8, 12, 14} using this form of therapy, have questioned the value of early debridement. Our plan for management of a patient with gas gangrene, along with others,^{1, 2, 5, 10, 16} consists of adequate fluid therapy, antibiotics and early debridement. We feel the debridement should be wide enough to remove all devi-

TABLE 1
A SUMMARY OF FIVE CASES OF GAS GANGRENE TREATED AT THE
UNIVERSITY OF KANSAS MEDICAL CENTER SINCE JUNE 1967

GAS GANGRENE

PATIENT IDENT.	INITIAL TREATMENT PTA KUMC	CULTURES	AREA OF INJURY	TREATMENT	COMPLICATIONS
1. F. (31)	48 HRS.	CL. PERFRINGENS	ANKLE	HIGH OPEN AK. AMP.	DELAYED WOUND HEALING
2. F. (16)	144 HRS.	CL. PERFRINGENS	FOOT	WIDE LOCAL DEBRIDEMENT	
3. M. (7)	72 HRS.	CL. PERFRINGENS SPOROGENES SORDELLI	FOREARM	HIGH OPEN AE AMP HYPERBARIC OXYGEN	DIED
4. M. (22)	55 HRS.	CL. PERFRINGENS	DISTAL LEG	HIGH OPEN AK AMP.	FAT EMBOLISM
5. M. (10)	72 HRS.	CL. PERFRINGENS	WRIST	WIDE LOCAL DEBRIDEMENT	NON-UNION RADIUS

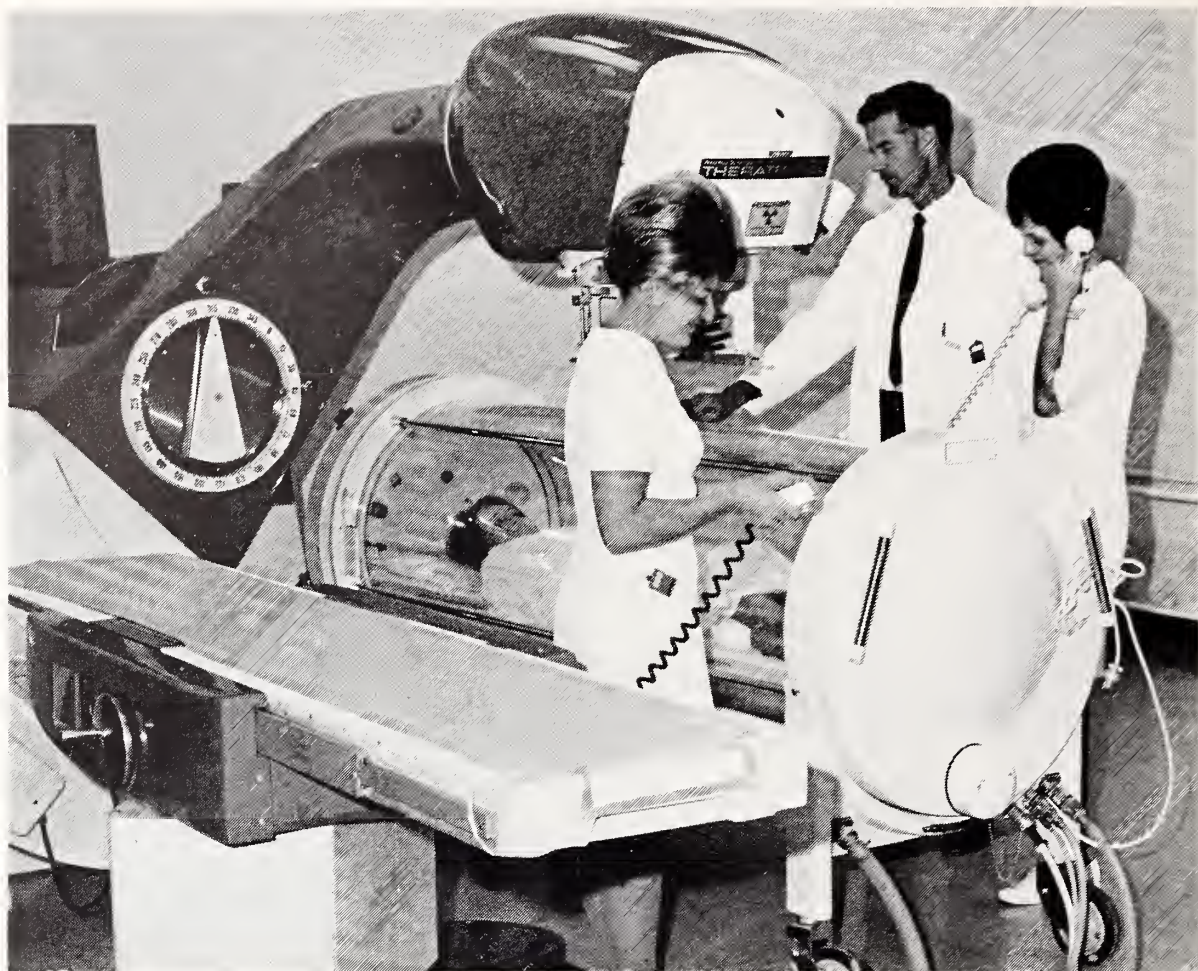


Figure 2. The small "one-man chamber" hyperbaric oxygen unit available for use in the Radiology Department at the University of Kansas Medical Center.

talized tissue; this will occasionally necessitate amputation.

The concept that increased pressures of oxygen might be beneficial in the treatment of gas gangrene is not new. In 1878, Paul Bert⁴ showed that exposure to high pressure oxygen inhibited the growth of anaerobic organisms. The physiological concept of hyperoxygenation was outlined by Haldane⁷ in 1895. Oxygen is present in the blood in two forms; physically dissolved, and chemically combined as oxyhemoglobin. Hemoglobin concentration is normally 14 to 15 grams per cent. One gram of hemoglobin combines with 1.34 cc's of oxygen so that at full saturation blood contains about 20 volumes per cent of oxygen as oxyhemoglobin. Arterial hemoglobin saturation with oxygen is normally 96 to 98 per cent. Normally the oxygen physically dissolved in arterial plasma is .3 cc per 100 ml. of plasma. If one increases the oxygen content that a patient breathes to 100 per cent, or in addition increases the pressure to 3 atmospheres, the amount of increased oxygen carried by arterial hemoglobin is very small due to its usual nearly complete saturation. If a patient breathes

100 per cent oxygen, the physically dissolved oxygen increases from .3 volumes per cent to 2.3 volumes per cent. If in addition, the pressure is increased to 3 atmospheres, the physically dissolved oxygen increases to 6.8 volumes per cent (Figure 3). These calculations are derived from the gas laws of Dalton, Henry, and Charles. At inspired oxygen pressures of 3 atmospheres most tissues are able to carry on normal metabolism with oxygen solely from physical solution so that oxyhemoglobin now passes unchanged from arterial to venous circulation. The normal diffusion gradient of oxygen between arterial blood and tissues is 2. At 3 atmospheres pressure and breathing 100 per cent oxygen the diffusion gradient at tissue level is about 44.¹¹ At these levels the blood stream is able to deliver enough oxygen to the tissue to be toxic to the clostridial organism. Hyperbaric oxygen probably does not kill the existing organisms, but inhibits their growth. In addition, there is evidence that production of the toxins, especially the alpha toxin, is suppressed.¹⁵ Once the toxin production ceases, the circulating toxins are rapidly fixed by soft tissue and this probably accounts for the

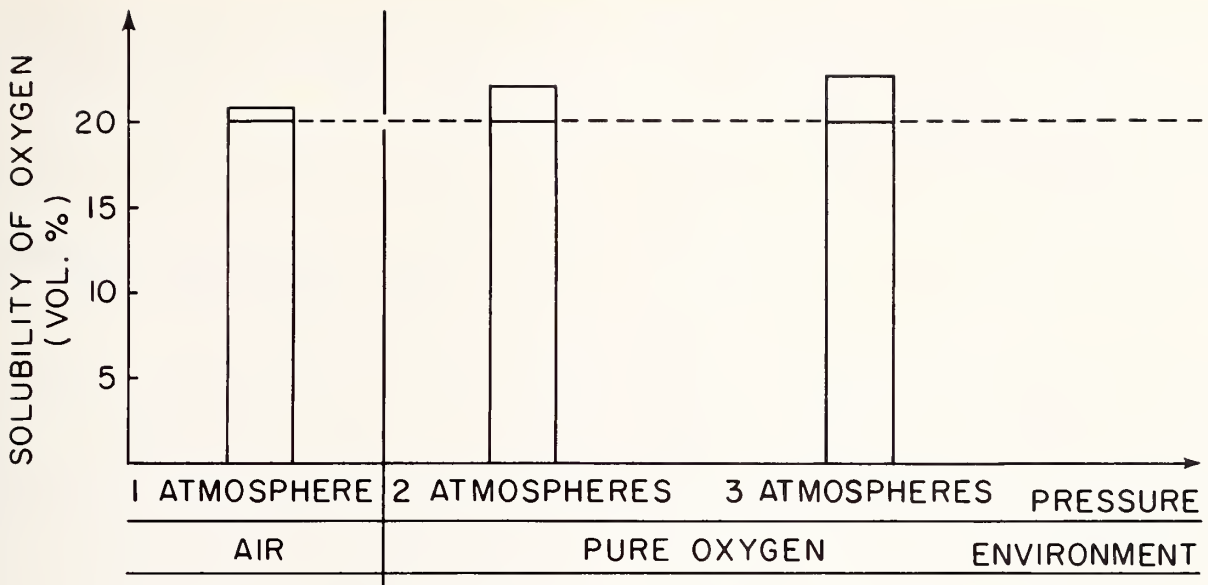


Figure 3. Oxygen carriage in blood under normal conditions and under increased pressure.

marked clinical improvement frequently reported with hyperbaric oxygen therapy^{1, 16} (Figure 4).

There are certain dangers associated with the use of hyperbaric oxygen therapy, and it is essential to take the strictest precautions to avoid these problems. Man can tolerate enormous pressures provided they are evenly distributed throughout the body. Barotrauma is the result of pressure changes in the gas-filled cavities of the body and can involve the sinuses,

respiratory tract or the gastrointestinal tract. In practice, the only problem commonly met is the failure of the middle ear to equilibrate.^{1, 6} This may occasionally require a myringotomy. Decompression sickness results from bubble formation, probably from nitrogen being present in the blood and tissues in a supersaturated state.⁶ The symptoms may be mild with only joint pain; or they can be very severe, involving the lungs, heart or brain. Only strict

ACTION OF HYPERBARIC OXYGEN

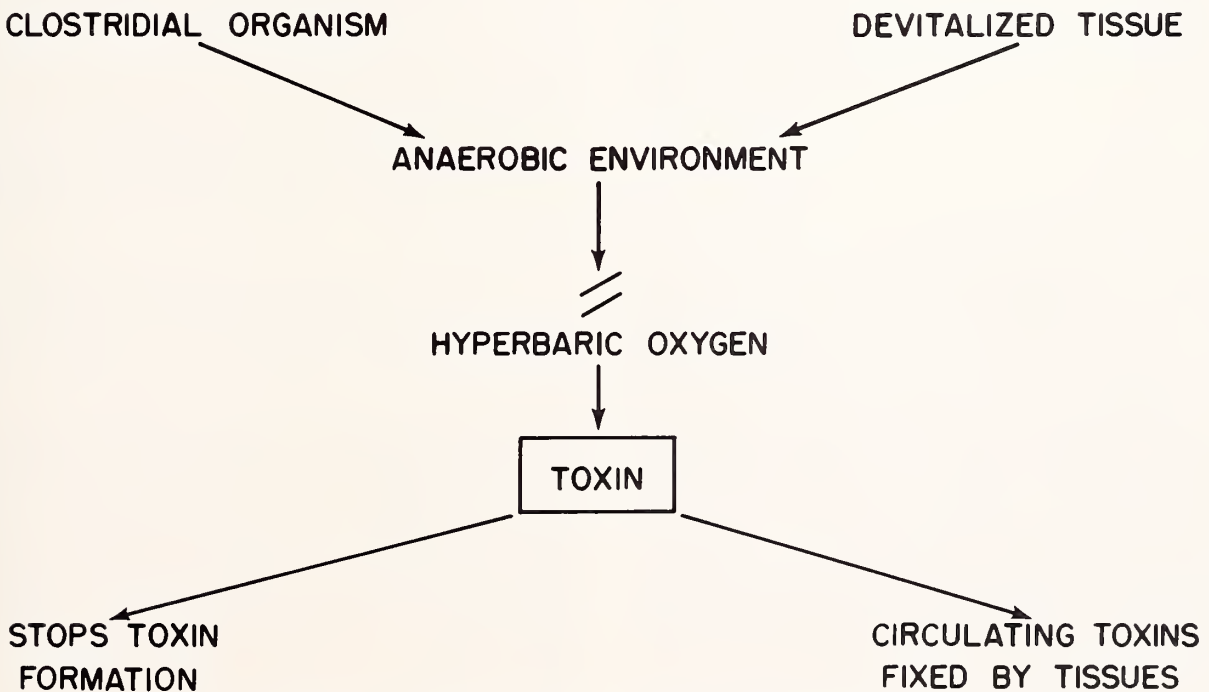


Figure 4. The action of hyperbaric oxygen in halting the disease process, gas gangrene.

adherence to adequate decompression routines prevents this problem. Oxygen toxicity has been reported⁶ with hyperbaric oxygen therapy. This is manifest by central nervous system irritability and seizures. It may be prevented by keeping the pressure below 3 atmospheres and sedating the patient. Oxygen supports combustion and under pressure more so, consequently, strict precautions must be taken to prevent fire when using hyperbaric oxygen therapy.

The polyvalent gas gangrene antitoxin has received much attention over the past several years. There is some evidence that the use of antitoxin in conjunction with adequate surgery aids in the control of associated toxemia.² No one advocates the use of antitoxin as a means of prophylaxis for gas gangrene. Most^{4, 5, 8, 10, 14} feel the possible merits of the antitoxin are outweighed by the hazards of serum sickness and hypersensitivity reactions.

Patients with gas gangrene, a disease not commonly seen in civilian practice, frequently suffer from delayed diagnosis and improper treatment. The disease occurs with enough frequency that a review of its prevention, etiology, pathophysiology and treatment seems merited. Five cases of gas gangrene have been seen at this institution since June 1967. The methods and results of treatment are reviewed. Gas gangrene occurs primarily as a complication of inadequate debridement in wounds of trauma. Adequate debridement of severely contaminated wounds is the best way to prevent gas gangrene. Early diagnosis, vigorous fluid therapy, antibiotics and thorough surgical debridement of devitalized tissues are complementary modes of treatment in the successful therapy for a patient with gas gangrene. We feel hyperbaric oxygen therapy is a useful adjunct in the treatment of gas gangrene when the initial therapy does not readily control the toxemia.

References

1. Altmeier, W. A. and Furste, W. L.: Gas gangrene. *Int. Abst. of Surg.* 84:507, 1947.
2. Altmeier, W. A.: Diagnosis, classification and general management of gas producing infections, in, *Proceedings of the Third International Conference on Hyperbaric Medicine*, Ed. Brown, I. W. and Cox, B. G., Washington, D. C., National Academy of Science, National Research Council, 1965, p. 481.
3. Brummelkamp, W. H.; Hogendijk, J. and Boerma, I.: Treatment of anaerobic infections (Clostridial myositis) by drenching the tissues with oxygen under high atmospheric pressure. *Surg.* 49:299, 1961.
4. Colwill, M. R. and Maudsley, R. H.: The management of gas gangrene with hyperbaric oxygen. *J. Bone and Joint Surg.* 50B:732, 1968.
5. Eraklis, A. J.; Fuller, R. M.; Pappas, A. M. and Bernhard, W. F.: Evaluation of hyperbaric oxygen as an adjunct in the treatment of anaerobic infections. *Am. J. Surg.* 117:485, 1969.

6. Fundamentals of Hyperbaric Medicine, Prepared by the Committee on Hyperbaric Oxygenation. Washington, D. C., National Academy of Sciences, National Research Council, 1966.

7. Haldane, J.: The relation of the action of carbonic oxide to oxygen tension. *J. of Physio.* 18:201, 1895.

8. Hitchcock, C. R.; Haylin, J. J. and Arnar, O.: Treatment of clostridial infections with hyperbaric oxygen. *Surg.* 64:759, 1967.

9. MacLennan, J. D.: The histotoxic clostridial infections of man. *Bact. Rev.* 26:177, 1962.

10. Patman, R. D.: Surgical infections-prophylaxis-relation to trauma, in, *Care of the Trauma Patient*, Ed. Shires, G. T., New York: McGraw-Hill, 1966.

11. Schlemmer, R. B.: Use of Hyperbaric Oxygenation in Management of Clostridium Myonecrosis, Unpub. data, December, 1967.

12. Slack, W. K.; Thomas, D. A.; Hanson, G. C.; Chew, H. E. R.; Maudsley, R. H. and Colwill, M. R.: Hyperbaric oxygen in infection, in, *Proceedings of the Third International Conference on Hyperbaric Medicine*, Ed. Brown, I. W., and Cox, B. G., Washington, D. C., National Academy of Science, National Research Council, 1965, p. 521.

13. Slack, W. K.; Hanson, G. C. and Chew, H. E. R.: Hyperbaric oxygen in the treatment of gas gangrene and clostridial infections. *Brit. J. Surg.* 56:505, 1969.

14. Trippel, O. H.; Ruggie, H. N.; Staley, C. J. and Van Elk, J.: Hyperbaric oxygen in the management of gas gangrene. *Surg. Cl. of N.A.* 47:17, 1967.

15. Unnick, A. J. van: Inhibition of toxin production in clostridium perfringens in vitro by hyperbaric oxygen. *J. Micro. and Ser.* 31:181, 1965.

16. Zyl, J. J. van; Maartens, P. R. and Du Toit, F. D.: Gas gangrene treated in one man hyperbaric chamber, in, *Proceedings of the Third International Conference on Hyperbaric Medicine*, Ed. Brown, I. W., and Cox, B. B., Washington, D. C., National Academy of Science, National Research Council, 1965.

New Department in AMA

(Continued from page 78)

Assembly in developing the Association's Annual Convention scientific program;

- Generate stimulating and engaging interdisciplinary and specialty-oriented programs which will command the interest of greater numbers of practicing physicians;

- Provide a direct and continuing liaison between a section and its corresponding specialty societies;

- Permit specialty societies direct access to the House of Delegates through their appointed delegates, and

- Give AMA specialty sections recognized status by identifying them directly with the specialty societies."

The Department's responsibilities, under the direction of Mr. Chilcoat and a staff aide, are to assist Doctor Wilbur in his secretarial services to the AMA Interspecialty Committee, further liaison with specialty groups, and advance the development of the section councils of the House of Delegates.

Management of Prostatism

Indications for Surgical Intervention

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PROSTATISM is a clinical syndrome of bladder outlet obstruction where the patient complains of urinary hesitancy, postmicturition dribbling, a diminished urinary stream, increased frequency and nocturia. In the older age male the obstruction is usually secondary to benign prostatic hypertrophy. However, the pathologic process may be secondary to carcinoma of the prostate, vesical neck contracture, urethral stricture or neurogenic disease. A significant number of diabetics will have an impaired voiding pattern on the basis of peripheral neuropathy with secondary neurogenic bladder. In the younger male patient the most common cause of bladder outlet obstruction is vesical neck contracture, but one should not forget the possibility of spinal cord disease. In our experience the underlying pathology in patients requiring surgical correction of their bladder outlet was benign prostatic hypertrophy in 70 per cent, vesical neck contracture in 13 per cent and carcinoma of the prostate in 15 per cent.

The treatment of prostatism secondary to an obstructing prostate is surgical. Indications for surgical intervention are the patient's symptoms which make the diagnosis of prostatism. The size of the prostate has little to do with indications for surgery, as a small gland may be highly obstructive. Residual urine is always a late manifestation of bladder outlet obstruction and surgical intervention should have been considered earlier. The amount of residual urine is not important as any residual urine means bladder decompensation. Along with residual urine the late manifestations of prostatism are infection, stones, structural change in the bladder with diverticulae formation and finally, impaired renal function. Urinary tract infection in the male patient regardless of age is almost always secondary to some underlying organic pathology. The elderly patient with cystitis must be completely evaluated for possible prostatism. Bladder stones are secondary to chronic infection and outlet obstruction. These patients should have the bladder stones removed and the obstructing process corrected. One of the more common compli-

cations of prostatism is decompensation of the urinary bladder. Since adequate voiding is dependent not only on an open bladder outlet but also upon adequate tone, surgery should be considered early before irreversible change in the bladder strength has occurred. Not infrequently we see patients with severe decompensation of the bladder and diverticula

We feel that the patient with prostatism should have proper surgical correction of the underlying pathology. In most instances the pathologic process is secondary to benign prostatic hypertrophy. The transurethral approach to the prostate has been, in our experience, the most satisfactory method because of its low mortality ($\frac{1}{2}$ of 1 per cent) and morbidity. The results are excellent and the long-term complications such as stricture, incontinence and infection are minimal. The so-called medical management of prostatism has little rationale, usually is ineffective and, in general, contraindicated.

formation who fail to void satisfactorily after the obstruction has been relieved. In such cases, prolonged drainage of the bladder with a catheter may be necessary to restore the bladder strength. Occasionally parasympathomimetic drugs are of help in such patients. Renal failure may also be secondary to chronic bladder outlet obstruction which has secondarily impaired the drainage of the kidneys. Again, catheter drainage may be necessary to allow the kidneys to recover and permit prostatectomy to be done under reasonably safe conditions. Therefore, surgery should be considered in the male patients who have definite symptoms of bladder outlet obstruction which are persistent and, indeed, progressive. It is not in the patient's best interest to wait until he develops the complications of advanced prostatism such as infection, renal damage and bladder decompensation.

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The common types of prostatic surgery for the correction of prostatism are the transurethral prostatectomy, suprapubic prostatectomy, retropubic and perineal approach to the prostate. We have found that transurethral prostatectomy is the most satisfactory method as a routine approach to the prostate. It is applicable in 95 per cent of cases of prostatism. Other areas, such as the Peter Bent Brigham Hospital, have also reported a change from the open methods of prostatectomy to the transurethral resection and now use it in over 75 per cent of their cases. The reason for this increased use of the TUR has been due to the low morbidity and mortality. Our mortality rate in a large series of transurethral prostatectomies is one-half of one per cent which is four to ten times less than the mortality reported for open prostatectomy. The most common causes of death following a TUR are cardiovascular. Postponing needed surgery in a patient until he is elderly subjects this patient to increased surgical risk because of his impaired cardiovascular system. The morbidity of transurethral prostatectomy is also quite low with the majority of the patients leaving the hospital within seven days following surgery.

The results of transurethral prostatectomy are excellent. The incidence of recurrence requiring another surgical procedure was less than 3 per cent in patients with benign prostatic hypertrophy. The transurethral prostatectomy is a precise surgical procedure, which, when performed correctly, can remove as much tissue as any other form of prostatectomy. The term prostatectomy for benign prostatic hypertrophy is a misnomer in that all operations remove the adenomatous hyperplasia which has developed over a period of years leaving behind the surgical capsule which is the compressed normal prostate.

The long-term complications following transurethral prostatectomy were also minimal. Urethral stricture following prostatectomy has been reported to be 3 to 5 per cent regardless of the type of prostatectomy used. In our experience the true incidence of the urethral stricture was 1 per cent or less following transurethral surgery when the urethra was properly calibrated and the appropriate size instruments used. We found that when resectoscopes were introduced through a perineal urethrotomy when the prostate was over 40 grams in size or when the distal urethra calibrated less than 30 French, the incidence of strictures was reduced from 30 per cent to 1 per cent. The perineal urethrotomy was also useful in patients with a high-lying gland, a tight suspensory ligament of the penis or other mechanical problems that would make the surgery done through the full length of the urethra difficult. In all patients the urethrotomy has healed by secondary intention without stricture formation. We therefore consider the perineal urethro-

my to be a safeguard for the patient and use it in approximately 30 per cent of cases. Incontinence following transurethral prostatectomy was of a mild stress pattern in 5.5 per cent and was persistent and significant in only 1.4 per cent. The incidence of incontinence is increased in patients who have carcinoma of the prostate because of involvement of the sphincter mechanism with a malignant tumor. Patients with chronic cystitis in the absence of upper tract disease will be cured unless the bladder has decompensated. All patients following transurethral prostatectomy will demonstrate micropnyuria for four to six weeks. A persistence of infection is usually indicative of a hypotonic bladder or one with multiple diverticula and cellule formation. This low incidence of complications following surgery is not found in the open prostatectomy. The open approach to the prostate for benign disease is now used only in the carefully selected patient, by most surgeons.

In spite of the low mortality and morbidity, we are still trying to improve the results of the transurethral prostatectomy. Since cardiovascular disease accounts for the greatest mortality, such poor risk patients are carefully monitored during surgery. A continuous EKG is obtained and the central venous pressure is monitored. Evaluation of the central venous pressure not only helps the surgeon evaluate the patient's cardiovascular status, but permits him to properly administer blood and intravenous fluids. The use of isotonic irrigating solution has eliminated lower nephron nephrosis and hemolysis. Proper monitoring of the patient's fluid and electrolyte balance during and following surgery are also important safeguards. There have also been advances in the instruments used in the surgery such as the high frequency cutting units which enable the surgeon to complete the transurethral prostatectomy in a shorter period of time. The optical systems of the instruments have also been dramatically improved and research is now being conducted on a wide-field lens system.

The use of cryosurgery in disease of the prostate has now been abandoned by most centers. We have recently begun to use in selected patients the opposite approach, using a high frequency current to desiccate the prostate. Although our experience is small at this time, it would appear to be of some value in the severely debilitated patient.

The nonsurgical approach to prostatism for benign prostatic hypertrophy has little value. Occasionally a patient with prostatitis and benign prostatic hypertrophy will be improved by a course of antibiotics but this is usually only of temporary value. Infection promptly returns when the antibiotic is stopped because the basic problem of obstructing benign hyper-

(Continued on page 92)

The Injured Hand

Management of the Metacarpophalangeal Joint: The Key to Hand Function

LYNN D. KETCHUM, M.D., DAVID W. ROBINSON, M.D., and
FRANK W. MASTERS, M.D., *Kansas City**

THE SO-CALLED "position of function" in which the wrist is splinted in moderate dorsiflexion (30° to 45°) and metacarpophalangeal and interphalangeal joints are held in flexion (45° flexion and 30° respectively) has been widely stressed in the management of the injured hand. Unfortunately, injuries which do not involve the hand directly, such as lacerations of the ulnar and median nerves in the forearm or upper arm, create significant deformity and subsequent loss of hand function, even though the hand itself is not injured. If the nerve injury takes place below the level of motor innervation to the long flexor muscles, a claw hand will develop with surprising rapidity. If, however, the injury occurs above this level and the nerves are primarily repaired, a claw deformity will occur, but will be delayed until the regenerating nerves reach the level of the flexor muscles. Gross grip will often return from reinnervation of these larger muscles, but the prognosis for return of intrinsic activity is poor and, unless carefully managed, unnecessary functional loss may occur. Since the metacarpophalangeal joint is the key to ultimate function in injuries not involving the hand directly, it is our purpose to discuss the derangements of functional anatomy and the methods of management designed to minimize deformity and preserve function.

When the median and ulnar nerves are divided, claw deformity occurs rapidly. The deformity, consisting of hyperextension of the metacarpophalangeal joints and flexion of the interphalangeal joints, results from inactivation of the interosseous and lumbrical muscles, whose primary function is to stabilize the metacarpophalangeal joints. This stabilization permits the tendons to extend completely the interphalangeal joints against the pull of the long flexor tendons. The intrinsic muscles, however, are the only extensors of the interphalangeal joints when the metacarpophalangeal joint is hyperextended under normal conditions, and when these muscles are inactivated, interphalangeal joint extension cannot oc-

cur. Furthermore, balance between the extensors and flexors is lost at the metacarpophalangeal joint in median and ulnar nerve palsies so that, with the long extensor tendons unopposed, the proximal phalanges are pulled into hyperextension. In the hyperextended position, the dorsal hood of the extensor mechanism rides backward, thereby checkreining proximal gliding of the long extensor tendon which cannot then

Attention is drawn to the rapidly developing static contracture of the hand following injury to the median and ulnar nerves in the forearm or upper arm. The pathophysiology involving the metacarpophalangeal joint, the focal point of muscular imbalance following these injuries, is discussed in detail, as well as the surgical approach to restore balance through active splinting of the metacarpophalangeal joints.

pull through to the interphalangeal joints. It can only do this when the joint is stabilized in slight flexion, which opens the joint, lengthens the digit, and increases leverage on the proximal interphalangeal joint. This is the key to treatment. A splint that prevents full extension or hyperextension of the metacarpophalangeal joints should be used temporarily (*Figures 1 and 2*). With the metacarpophalangeal joints thus stabilized, the long extensor tendons can then extend the interphalangeal joints (*Figures 3 and 4*). Such a splint also prevents shortening of the collateral ligaments of the metacarpophalangeal joints, which are relaxed, and eventually undergo contracture if the joints remain extended. If these ligaments and the joint capsules are allowed to contract, it may take months to lengthen them by dynamic splinting and a capsulotomy may be required to obtain metacarpophalangeal joint flexion again.

Before discussing methods of permanently restoring balance to the hand by active internal splinting, the importance of exercise of these joints should be

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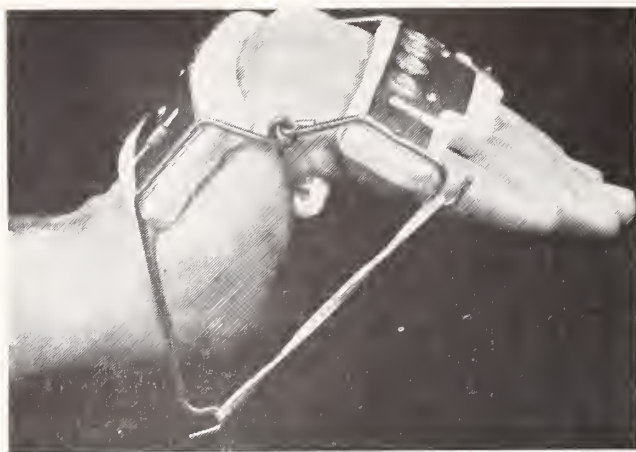


Figure 1. Dynamic splinting of the metacarpophalangeal joints. These joints can be actively extended, but with relaxation of the extensor tendons, the joints are returned to the desired degree of flexion.



Figure 2. In long standing claw hand deformities, the wrist is held in a flexed position to minimize the deformity of the fingers. This dynamic splint produces dorsiflexion of the wrist, flexion of the M-P joints and extension of the interphalangeal joints.

mentioned. Diligent passive flexion of the metacarpophalangeal joints and extension of the interphalangeal joints is essential to prevent joint stiffness and contracture. Despite its importance, when the exercise period is over, the muscle imbalance of the hand reproduces the claw deformity. This becomes more important if the joint is not splinted or exercised over a prolonged period of time, such as during sleep.

Following denervation of the intrinsic muscles of the hand, the use of external splinting and exercise are only temporary modalities, and the joints should be actively stabilized surgically by some means such as repositioning the insertion of the flexor superficialis tendons from the middle phalanges to the proximal phalanges (Figure 5). This serves to relieve flexor force at the proximal interphalangeal joints and places it at the metacarpophalangeal joints, stabilizing these joints and preventing hyperextension of the metacarpophalangeal joints, and allowing the long extensor tendons to pull through to the interphalan-

geal joints. This must be done relatively soon after injury; if not, the patient tends to keep the wrist in a flexed position, which inactivates the sublimis transfer. Such a transfer restores some of the balance lost in the hand secondary to median and ulnar nerve injuries. With this balance restored, auto-physical therapy is actually built into the hand and the long term use of external appliances becomes unnecessary (Figure 6).

This method is but one example of active internal splinting. There are others but the principle is essentially the same, that is stabilization of the metacarpophalangeal joints. Passive metacarpophalangeal joint stabilization may be accomplished by using fascial grafts across the volar surface of the metacarpophalangeal joint or excision of a segment of volar skin to produce a slight flexion contracture. These methods are less physiologic and less desirable than



Figure 3. The typical deformity of hyperextension at the M-P joints and flexion at the interphalangeal joints.



Figure 4. With the metacarpophalangeal joints blocked in slight flexion, the dorsal hood of the extensor mechanism rides forward. The proximal gliding of the long extensor tendons is not checkreined in this position and they are able to pull through to the interphalangeal joints producing extension.



Figure 5. Pre-operative view of a 16-year-old male patient with a claw hand secondary to a laceration at the wrist, producing a median ulnar nerve injury.



Figure 6. Postoperative view of the same patient. The claw deformity was reversed and balance restored to the hand by sublimis tendon transfers, which in effect function as active internal splints.

active transfers. Occasionally the hand will be injured as well as the forearm, and dynamic splinting cannot be used. In such cases, optimal position can be maintained by Kirchner wires which transfix metacarpophalangeal joints in moderate flexion. It should be emphasized that it is difficult to maintain metacarpophalangeal flexion in a dressing. Although a dressing may look good, the position of the hand can change within the dressing without this being appreciated. Once the important balance of the hand is lost through denervation of the intrinsic muscles, the changes seen are insidious but relentless.

References

1. Zancolli, E., M.D.: *Structural and Dynamic Basis of Hand Surgery*. Philadelphia: J. B. Lippincott Company, 1968.
2. Bunnell, S.: *Surgery of the Hand*, ed. 2. Philadelphia: J. B. Lippincott, 1948.
3. Boyer, J. H.: *Bunnell's Surgery of the Hand*, ed. 4. Philadelphia: J. B. Lippincott, 1964.
4. Brand, P. W.: Paralytic claw hand. *J. Bone Joint Surg.* 40-B:618, 1958.

WESTERN CONFERENCE ON CRIMINAL AND CIVIL PROBLEMS

The first biennial meeting of the Western Conference on Criminal and Civil Problems (WCCCP) will be held May 14 through 16 in the Broadview Hotel, Wichita, according to announcement by Dr. William G. Eckert, associate director of laboratories for St. Francis Hospital and WCCCP organizational committee chairman.

The forensic science group is designed to foster advanced education in the field of medicine, the specialized medical-legal areas of pathology and psychiatry, law, and police administration and sciences.

Dr. Eckert stated that the Western Conference will attract a large percentage of the nation's 150 forensic pathologists, in addition to leaders in law, medicine and the police sciences within a 500-mile radius of Wichita.

Topics scheduled for intensive study during the three day conclave include: Murder in Your Community; Police and Law Enforcement; Legal and Judicial; Community Drug Problems; Medicine and Toxicology.

Emergency Service Experience

Emergency Care Delivery

ROGER L. YOUMANS, M.D., *Kansas City**

THE EMERGENCY ROOMS of hospitals in Kansas, particularly in the larger communities, are experiencing the same kinds of changing problems that have been experienced throughout the country recently.¹⁻⁴ In general, the number of patients coming to emergency rooms has been rising at about ten per cent per year, the majority of the increase being due to non-emergent patients. This has resulted in crisis-producing stress in many hospitals in this geographic area, with the blame placed on differing factors, depending on to whom you talk. Some blame the patients for not going to the doctor's office, or they blame the doctors for being too busy or lazy, or they blame the hospitals and their administrators or the federal government and its health care policies. This article is to briefly summarize the response of the University of Kansas Medical Center to this crisis and to record the initial results.

Response to the Emergency Care Problem

Recognizing the increasing pressure of patients in the emergency room, the limited space available, the high risk of medical errors involved in treating emergency patients, and the sensitivity of this area in public relations, a number of basic changes were made in 1967. The Emergency Service area was expanded to include 11 patient rooms containing 20 examining units, two nursing stations, two waiting rooms, a staff-conference room, sleeping quarters, and necessary reception and office space. A physician-director of the service was named and made responsible to the Emergency Service Committee (later changed to the Ambulatory Patient Committee). Residents from the three basic services, medicine, surgery, and pediatrics, were assigned to the Emergency Service as their primary responsibility. Every patient was to be seen and treated by a resident under the supervision of a staff physician. Patients were to be charged an Emergency Service fee by the hospital regardless of the patient's financial classification. The responsibilities of the Emergency Service were (1) to provide high quality medical and surgical care to every patient who came requesting such care, (2) to pro-

vide a good educational experience for medical students and young physicians, and (3) to engage in research, primarily in the area of delivery of high quality emergency care. An Emergency Service Manual was written (and later extensively revised) to serve as a basis of the day-to-day operations. The Poison Control Center was reactivated with a direct telephone line installed for emergency use. Various educational and research activities were initiated.

Results

A retrospective review of our experience during the last three years has shown the patient load to have increased greatly (*Table 1*), the majority of the patients being non-emergency in nature. "True emergency" visits are defined as those in which the patient's course or results might be significantly altered by a delay of treatment for half an hour or more after their arrival at the emergency room. These included lacerations, fractures, recent car wrecks, high fevers, acute asthma, acute chest pain or abdominal pain, etc., and the distinction between "true emergencies" and other patients was made by the triage nurse as each patient entered the Emergency Service. Both groups of patients are seen by a physician, but priority goes to the "true emergency" patients. There was a 42 per cent increase in the number of true emergency visits since the changes in 1967 and a 345 per cent increase in the non-true emergency visits. The number of patients admitted through the Emergency Service has increased roughly parallel to the true-emergency patient load (about 20 per cent of the true emergency patients or currently 8.5 per cent of all Emergency Service visits).

The distribution of patients by the time of day is shown in *Table 2* and is essentially in agreement with other reports.⁵ There is a small increase of the percentage of true emergencies during weekends, and an increase of non-true emergency visits on Monday, that being our most active day.

An attempt is always made to identify and contact the patient's own doctor for his advice, and if he cannot be located, we at least try to inform him of what our findings and treatment were. However, less than 1 per cent of our patients would identify a private physician for us. This is quite surprising, be-

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TABLE 1
PATIENT LOAD IN THE
EMERGENCY SERVICE

Year	True Emergency	Non- emergency	Total
1966	10,192 (est. 70%)	4,368 (est. 30%)	14,560
1967	11,739	8,837	20,576
1968	12,956	15,268	28,224
1969	13,953	18,705	32,658

cause 52 per cent of our Emergency Service patients are classified as private (financially), and if medicare and welfare patients are included, the figure rises to 73 per cent!

A prospective study was recently done to demonstrate any difference in the care given to patients based on their financial classification. A total of 104 patients were included, selected at random, but including all shifts of the day and night and weekends, as well as weekdays. These patients (or their families) were questioned by a student nurse before they were seen by a doctor, afterwards, and then followed up in their homes several weeks later. No difference in care based on classification could be demonstrated, but several interesting facts were noted.

The patients stayed in the emergency area on an average of slightly less than two hours (this included all laboratory, radiologic, and other diagnostic studies, as well as their treatment). This time interval that the patient spent in the emergency area was about what was expected by 72 per cent of the patients and was thought unnecessarily long by only 8 per cent of the patients. The attitude of the personnel was considered by the patients to be the part of their experience which they liked the most. The

doctor's interest in the patient's problem, based on a scale of five in which five was extremely interested and one was uninterested, was an average of 4.0. His interest in the patient as a person was rated by the patients as an average of 3.7, and the interest of the nurses as 3.6. In terms of satisfaction with their entire experience in the Emergency Service, the patients gave an average rating of 3.2, which indicated that they were more than satisfied (4.0 was very satisfied, and 1.0 was very dissatisfied).

Discussion

The explanations for the rapidly rising use of hospital emergency rooms as a source of primary patient care has many facets. Certainly the person or family who is new in a community may not have had time or occasion to locate a private physician, but in our community at least, primary physicians are busy enough that they sometimes refuse to take on the responsibility of new patients. The increasing specialization of physicians has resulted in the number of primary physicians available to be reduced, and while a specialist may be willing to take on new patients within his field, he usually will refuse other kinds of patients. The patients may not be at all certain what kind of specialist is appropriate or available for their illness or injury. If the patient tries to locate his own private physician, he may not be able to, or he may be referred to an associate physician who happens to be "on call" that night. The patient may be told to go to the hospital emergency room by his private physician where he may be seen by the intern or perhaps by his own doctor, but in either case, he may just go to the emergency room in the first place the next time he is ill. Some patients have been unhappy with the care they received from their private doctor but are reluctant to criticize him or do not know how to find a different doctor. Certainly the public's demand for health care has increased, and many people are less interested in a continuing

TABLE 2
DISTRIBUTION OF PATIENTS BY TIME OF DAY AND URGENCY OF NEED

Day = 50 Per Cent		Evenings = 39 Per Cent		Night = 11 Per Cent	
TRUE EMERGENCY Per Cent	NON-TRUE EMERGENCY Per Cent	TRUE EMERGENCY Per Cent	NON-TRUE EMERGENCY Per Cent	TRUE EMERGENCY Per Cent	NON-TRUE EMERGENCY Per Cent
14	36	19	20	7	4

True Emergencies = 40 per cent in 1969.
Non-true Emergencies = 60 per cent in 1969.

"doctor-patient relationship" than they are in reasonably prompt and competent care of their immediate complaint.

This situation can be met by a refusal to provide such prompt and adequate professional care in hospital emergency rooms and force the patients away by long delays or poor care. Professionally, this is an untenable alternative. Emergency room visits can be made exorbitantly expensive, but rather than discouraging patients, such a move would probably only result in uncollectable bills and angry patients. Some solution that allows for professional triage (separation of patients and appropriate medical care by trained personnel in a reasonable period of time and which is, at the same time, economically viable) is needed.⁶

In the Kansas City area there are already three hospitals staffing their emergency rooms with full-time emergency department physicians. Other urban centers in this area of the country have also taken this tact. A professional society has been organized for these physicians—the "American College of Emergency Physicians"—which holds annual clinical meetings.^{7, 8} Many other hospitals in our area rely on physicians who "moonlight" to provide coverage of their emergency departments, or their own staff physicians may rotate to provide coverage.^{9, 10} Not every hospital will be able to so staff their emergency department that good care can be promptly available, and this will necessitate some degree of regionalization of emergency care.^{11, 12}

The experience at the Kansas University Medical Center indicates that a satisfactory solution (from the patient's point of view) is possible in a reasonably large hospital in an urban community, but that such a facility will be used increasingly as a source of primary patient care. Whether such an arrangement is viable in smaller urban areas (with populations of around 25,000) is not known, but seems likely to be explored in the present decade. The translation of patient demands and medical resources into a satisfactory solution to the emergency care problem is largely a responsibility of the physicians in the community, and they ignore it or procrastinate at their own peril.

Acknowledgement: I wish to gratefully acknowledge the help of Miss Paula Waxe, the student nurse who helped evaluate the patients' reactions to our emergency care system.

References

1. Shortlife, E. C.; Hamilton, T. S. and Noroian, E. H.: The emergency room and the changing pattern of medical care. *New Eng. J. Med.* 258:20-25, 1958.
2. McCarroll, J. R. and Skudder, P. A.: Hospital emergency departments: Conflicting concepts of function shown in national survey. *Hospitals J.A.H.A.* 34:35-38, December 1, 1960.

3. Weinerman, E. R. and Edwards, H. R.: Yale studies in ambulatory care: Changing pattern in hospital emergency service. *Hospitals J.A.H.A.* 38:55-62, November 16, 1964.

4. Brose, R. A. and Youmans, R. L.: A study of emergency medical care services, Kansas City metropolitan area (hospital section). University of Kansas Medical Center, Kansas City, Kansas, September, 1968.

5. Kluge, David; Wegryn, Robert and Lemley, Bernice: The expanding emergency department. *JAMA* 191:801, 1965.

6. Beloff, Jerome: Adapting the hospital emergency service organization to patient needs. *Hospitals J.A.H.A.* 42:65-69, April 16, 1968.

7. Twenson, Robert F.: Is emergency service becoming a specialty? *Modern Hospitals* 102 No. 5:112, May, 1966.

8. Kennedy, Robert: A dilemma in emergency department coverage. *J. Trauma* 9:821, 1969.

9. *Emergency Department, a Handbook for the Medical Staff*, American Medical Association, Department of Hospitals and Medical Facilities, Chicago, Illinois, 1966.

10. Who should provide emergency care, AMA Law Division. *JAMA* 210:775-776, October 27, 1969.

11. Community-wide emergency medical services, Committee on Acute Medicine of the American Society of Anesthesiologists. *JAMA* 204:595-602, May 13, 1968.

12. Youmans, R. L. and Brose, R. A.: A basis for classifying hospital emergency services. *JAMA* (in print).

Management of Prostatism

(Continued from page 86)

plasia of the prostate has not been corrected. The use of Estrogen has no place in the treatment of prostatism and, because of the salt and water retaining nature of the hormone, may place a significant load on the cardiovascular system. The anti-androgen Cyproterone Acetate is now under investigation by some centers to determine whether prostatism can be improved by this medication. Preliminary studies indicate that some patients are improved but it is impossible to predict which ones. In all instances, patients are impotent.

TUESDAY EVENING, MAY 5

PRESIDENT'S BANQUET

ANN LANDERS, Guest Speaker

Annual Meeting

Kansas Medical Society

May 3-6, 1970

Broadview Hotel

Wichita

Respiratory Distress

Reversible Severe Cyanosis of the Newborn—A Manifestation of the Respiratory Distress Syndrome

LEONE MATTIOLI, M.D., HERBERT C. MILLER, M.D., and
ANTONI M. DIEHL, M.D., *Kansas City**

RESPIRATORY DISTRESS SYNDROME of the newborn mimicking cyanotic heart disease has been previously reported.¹ The clinical picture is characterized by profound generalized cyanosis and tachypnea, but marked respiratory distress with grunting and retractions is lacking. The classic roentgenographic signs of respiratory distress syndrome may be present. The electrocardiogram shows right ventricular hypertrophy to a greater degree than that commonly seen in the classic form of respiratory distress syndrome.² Despite the marked systemic hypoxemia there is little, if any, carbon dioxide retention. The acid base balance is usually well preserved and the prognosis is good. In a series of 13 infants reported by Robertson¹ two infants died and both had pulmonary hyaline membranes on postmortem examination. Since profound cyanosis is the salient feature, severe cyanotic congenital heart defect must be promptly ruled out.

It is our purpose to present two cases that probably illustrate varying degrees of the respiratory distress syndrome. These two infants underwent cardiac catheterization with selective contrast study 13 hours and 48 hours after birth respectively. No anatomic abnormalities other than a widely patent ductus arteriosus were demonstrated. Functionally, the hemodynamic changes of the neonatal pulmonary ischemia syndrome were observed.³ Both infants made a complete recovery.

Although the clinical diagnosis of respiratory distress syndrome may be strongly suspected we feel that it is an unwise policy to observe a cyanotic newborn infant placed in high environmental oxygen just to "see what happens." Persistent cyanosis of the newborn infant warrants an aggressive diagnostic approach.⁴ Such infants should be promptly transferred to a center where emergency cardiac catheterization and cardiac surgical procedures can be carried out should the infant prove to have treatable cyanotic congenital heart disease.

Case Material

CASE 1

This newborn, full term, female infant whose birth weight was 4.1 kg. was transferred to the University of Kansas Medical Center seven hours following birth because tachypnea and cyanosis were noted 15

Two newborn infants believed to represent atypical examples of the respiratory distress syndrome have been presented. In both cases the predominant features were cyanosis and tachypnea without significant retractions and grunting respirations. The infants underwent cardiac catheterization with selective contrast study very early in the course of their disease to exclude cyanotic congenital heart disease which might have been amenable to surgical palliation. Both infants were found to show a similar hemodynamic alteration which included pulmonary hypertension at a suprasystemic level, right-to-left shunting through the ductus arteriosus and severe arterial hypoxemia. A brief discussion of the theories proposed to explain the functional derangement observed in the severe form of the respiratory distress syndrome is included with appropriate therapeutic recommendations.

minutes after birth; both became more pronounced during the ensuing hours. The one-minute Apgar score was 9. On admission, generalized cyanosis was marked. The respiratory rate was 140 per minute; there were no retractions or grunting respirations. Although the respirations were shallow there appeared to be good air exchange on auscultation of both lungs. The heart rate was 180 per minute. There were no murmurs. The second heart sound

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TABLE 1
CARDIAC CATHETERIZATION DATA

	Pressure (mm Hg)	Oxygen Saturation in Per Cent	pH	PaO ₂ (mm Hg)	PaCO ₂ (mm Hg)
Case 1	MPA 60/40 (53)	—			
Age 13 hours	Des. Ao. 53/40 (50)	51	7.35	28	34
	LA (2)	95	7.39	54	29
Case 2	MPA 78/42 (58)	24			
Age 48 hours	Des. Ao. 70/35 (43)	28	7.0	8	64
Age 13 days	MPA 33/10 (16)	67			
* (room air)	LA (5.5)	92			
	PV	92	7.38	82	43

All data except * obtained at approximate environmental PO₂ of 400 mm Hg.
MPA: main pulmonary artery. LA: left atrium. Des. Ao.: descending aorta. PV: pulmonary vein.
Catheter entered the descending aorta through the patent ductus arteriosus and the left atrium via the patent foramen ovale
() pressures in parentheses are mean pressures.

was widely split and fixed and the pulmonic component was accentuated. The liver was not palpable. The peripheral pulses were considered to be somewhat diminished.

Roentgen examination of the chest (*Figure 1A*) showed a normal sized heart. Although the pulmonary vascular markings were normal, the lungs had a hazy, finely granular appearance. The electrocardiogram showed a marked rightward and superior shift of the QRS frontal vector with normal precordial patterns for the age of the infant. The umbilical arterial blood showed a pH of 7.3, PaO₂ of 31 mm Hg, a PaCO₂ of 32 mm Hg while in 80 per cent inspired oxygen atmosphere. The hematocrit was 60 per cent and the hemoglobin 20.5 gm. per cent.

Since the differential clinical diganosis included the respiratory distress syndrome and total anomalous pulmonary venous drainage of the obstructive type the infant was catheterized on the day of admission at 13 hours of extrauterine life (*Table 1*). No structural abnormalities were demonstrated. There was a marked pulmonary hypertension above systemic levels with a right-to-left shunt at the ductal level as well as the level of the foramen ovale; marked systemic hypoxemia was also present. Sodium bicarbonate infused into the pulmonary artery resulted in a rise in the peripheral oxygen saturation from 51 to 75 per cent.

The infant was maintained on intravenous fluids (Ringer's lactate and 5 per cent dextrose and water) for the next ten hours while the environmental oxy-

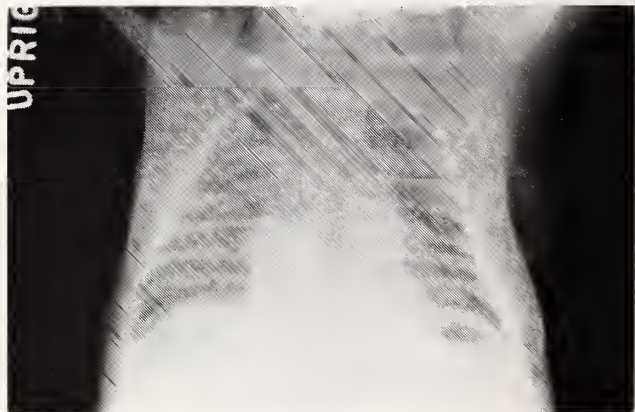


Figure 1A. Chest roentgenogram of Case 1, two hours following birth showing diffuse reticulo-granular pattern throughout the lungs.

Figure 1B. Chest roentgenogram of Case 1, three days after birth showing remarkable clearing of both lungs.

gen concentration was maintained at about 80 per cent. The PaO_2 varied from 21 to 50 mm Hg, and the pH from 7.38 to 7.40 and the PaCO_2 from 25 to 35 mm Hg. At 30 hours of age rapid improvement took place in that both the respiratory rate and the cyanosis diminished and the arterial oxygen tension rose to 377 mm Hg. The environmental oxygen concentration was reduced to maintain arterial oxygen tension slightly above 100 mm Hg. Repeat roentgen examination of the chest (*Figure 1B*) was normal. The infant was discharged on the fifth day of extrauterine life with a normal electrocardiogram and was considered to be well.

CASE 2

This full term, male infant was the product of an uncomplicated 40 weeks gestation, was born spontaneously and had a one minute Apgar score of 8. Within one hour of birth he became tachypneic and cyanosed. On admission to the University of Kansas Medical Center at 24 hours of extrauterine life the infant was deeply cyanotic. The respiratory rate was 100/minute. There was no grunting and only minimal intercostal retraction was noted. There were a few crepitant rales bilaterally. The first heart sound was normal. The second heart sound was closely split with an accentuated pulmonic component. There were no significant murmurs. The liver was palpable 3 cm below the right costal margin. The peripheral pulses were normal.

The roentgen examination of the chest (*Figure 2A*) showed generalized cardiomegaly and there were

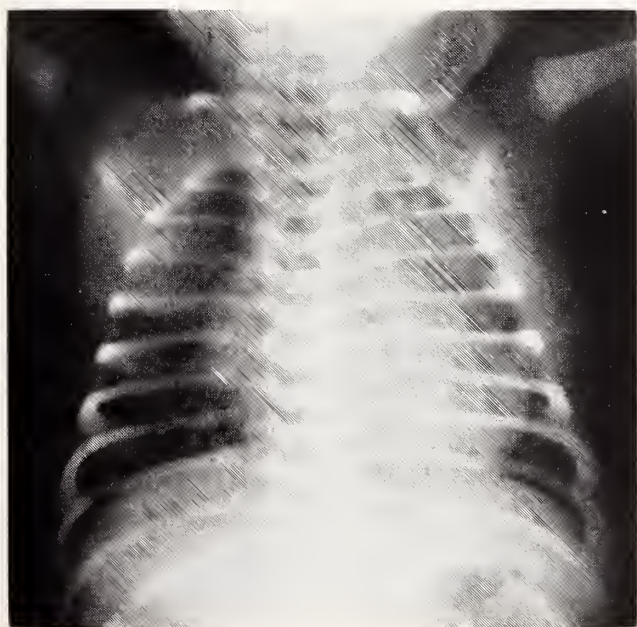


Figure 2A. Chest roentgenogram of Case 2, 24 hours after birth showing mild cardiomegaly and prominent pulmonary markings radiating from the hilar regions but no clear-cut evidence of a reticulo-granular pattern.

prominent markings radiating from the hilar regions bilaterally. There was no evidence of gross atelectasis nor consolidation and the finely granular pattern commonly seen in the respiratory distress syndrome was not present. The pulmonary vascularity was judged as normal. The electrocardiogram showed marked rightward and superior shift of the QRS frontal axis. There was evidence of right atrial hypertrophy and abnormal right ventricular hypertrophy. The hematocrit was 49 per cent. The cyanosis did not improve by placing the infant in high environmental oxygen. The infant was thought to be in congestive heart failure and was digitalized without apparent beneficial effect. At 48 hours of age emergency cardiac catheterization showed pulmonary hypertension above the systemic level, a profound peripheral hypoxemia in the descending aorta due to a right-to-left shunt at the ductal level demonstrated by a cineangiogram (*Table 1*). The PaCO_2 was 64 mm Hg and the PaO_2 was 8 mm Hg in the descending aorta. The left atrium was not entered. The injection of contrast material was made in the main pulmonary artery and the bolus was completely diverted into the descending aorta via the widely open patent ductus arteriosus. Neither the pulmonary venous return nor the left side of the heart could be outlined. Because of the critical condition of the infant the procedure was discontinued and sodium bicarbonate was infused. A definite diagnosis was not apparent at this time although a hypoplastic left heart syndrome was considered.

The infant underwent marked improvement during the next 24 hours documented by umbilical artery blood samples showing a progressive rise in PaO_2 to a maximum value of 212 mm Hg while the environmental oxygen concentration was kept at 80 per cent. The pH of the arterial blood was 7.42 and the PaCO_2 was 40. The oxygen was gradually reduced to maintain a PaO_2 of 80 mm Hg. On the 13th day of life the infant was recatheterized (*Table 1*). The pulmonary artery pressure was normal. The patent ductus arteriosus had closed. There was a slight oxygen desaturation of the pulmonary vein. There were no anatomic abnormalities. The infant was discharged at 14 days of age in good health. Roentgen examination of the chest was normal (*Figure 2B*) and the electrocardiogram was now normal for age.

Discussion

These infants are similar to those described by Robertson¹ who gave a detailed account of this syndrome. Case 2 represents a more severe form. This entity is probably a clinical variant of the vast spectrum of respiratory illnesses of the newborn referred to as the idiopathic respiratory distress syndrome.



Figure 2B. Chest roentgenogram of Case 2, ten days following birth showing no abnormalities.

The clinical course in these two infants differed from the classic form in that: (1) they were not severely depressed at birth, (2) they had marked tachypnea without retractions and grunting, (3) their cyanosis was out of proportion to the degree of respiratory distress, (4) their aortic arterial blood below the ductus arteriosus showed marked hypoxemia in the presence of a normal or slightly elevated CO_2 tension, and (5) their prognosis was good. Despite the very low PaO_2 in high environmental oxygen, which in immature infants indicates a poor prognosis,⁵ these mature infants usually survive. (6) Their electrocardiograms showed tall R waves in the right precordial leads suggesting a high pulmonary vascular resistance.²

Attention has recently been focused on the post-natal persistence of the fetal circulation in the respiratory distress syndrome resulting in both pulmonary ischemia and systemic hypoxemia. Pulmonary vasoconstriction is believed to cause the diversion of a large portion of the pulmonary blood flow into the systemic circulation through the patent foramen ovale and the patent ductus arteriosus. The pulmonary vasoconstriction is thought to be the result of alveolar hypoxia due to incomplete alveolar expansion and carbon dioxide retention.^{2, 6} The arterial acidemia resulting from both ventilatory failure and metabolic acidosis⁷ enhances the pulmonary vasoconstriction.⁸ A vicious cycle is thus established which leads to progressive systemic hypoxemia, carbon dioxide retention and acidemia, all of which may seriously impair the cardiovascular system.⁹

The term neonatal pulmonary ischemia has been proposed for the respiratory distress syndrome and an etiologic and pathogenetic theory has been postulated.¹⁰ According to this theory intrafetal hypoxia results in a decreased pulmonary perfusion which im-

pairs the surfactant production leading to alveolar instability and hyaline membrane formation. Doubts have been cast recently on the causative role of the pulmonary hypoperfusion in the development of the respiratory distress syndrome.⁶ Our hemodynamic data show the existence of pulmonary hypertension above systemic level with right-to-left shunting at the ductal level demonstrated by cineangiography in both cases and at the atrial level in Case 2 with marked systemic hypoxemia. Similar data have been reported by Talner¹¹ and Gersony.¹² No lung pathology was found at postmortem in the two cases described by Gersony which were felt to be excluded from the respiratory distress disease group. Ventilatory failure, manifested by carbon dioxide retention, was not present in Case 1 as was in those reported by Robertson.¹ In our Case 2 the carbon dioxide retention and the acidosis were probably related to the severity of the pulmonary vasoconstriction. The effect of sodium bicarbonate on the arterial saturation has been observed recently by Russell.¹³ The favorable outcome of our cases is in keeping with the previous report.¹ The transient nature of the pulmonary hypertension was documented in Case 2 and inferred in Case 1.

The necessity of becoming aware of this variant form of respiratory distress syndrome is obvious, since appropriate therapy such as suggested by Usher¹⁴ may be life saving. However, since potentially correctable cyanotic cardiac anomalies may be misdiagnosed at a critical time we feel, as others have stressed, that one should have an aggressive approach toward the diagnosis of the cyanotic newborn infant.⁵ We thus wish to emphasize the need for immediate transfer of the cyanotic newborn infant, in whom the diagnosis is doubtful, to a well-equipped center where cardiac catheterization and emergency cardiac surgery can be immediately performed. The previous policy of observing a cyanotic newborn in an increased oxygen environment should be abandoned. Since some babies with respiratory distress syndrome may masquerade as cyanotic congenital heart disease amenable to life saving palliative or corrective surgical procedures, emergency cardiac catheterization and selective cineangiocardiology is mandatory to demonstrate the anatomy and to determine if cardiovascular pathology is present.

References

1. Robertson, M. R. C.; Hallidie-Smith, K. A. and Davis, J. A.: Severe respiratory distress mimicking cyanotic heart disease in term babies. *Lancet* 2:1108-10, March 25, 1967.
2. Keith, J. D.; Rose, V.; Brando, M. and Rowe, R. D.: The electrocardiogram in the respiratory distress syndrome and related cardiovascular dynamics. *J. Pediat.* 59:167-187, August, 1961.

(Continued on page 103)

Rheumatic Fever—1970

—Current Concepts

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RHEUMATIC FEVER continues to tax the diagnostic acumen of physicians caring for children. Management of the acute phase of the disease and convalescent care will be emphasized in this communication. Although epidemiology is a fascinating aspect of acute rheumatic fever, it has been thoroughly reviewed previously¹ and will be only briefly mentioned at this time since little change has occurred. The role of antecedent streptococcal infection in acute rheumatic fever is well accepted, yet the exact pathogenesis of the disease remains unsolved. Hence, management must empirically be symptomatic and preventive. Individualization of the management in each case is paramount for proper care. The exact relationship between group A beta hemolytic streptococci and rheumatic fever is still not clearly delineated although it is well known that all initial and recurrent attacks of rheumatic fever are preceded by infection with this organism. However, a definite correlation of rheumatic fever and streptococcal disease continues to be clearly evident with the exact role incompletely defined. Individual patient response to streptococcal disease is the likely crucial factor for subsequent development of rheumatic fever. Acute rheumatic fever has an incidence of approximately 3 per cent following untreated or improperly treated streptococcal infections. Recurrent episodes of rheumatic fever are usually preceded by a new streptococcal infection and this incidence increases to 50 per cent when compared to the 3 per cent seen in the general population. Although some doubt continues to exist as to whether group A beta hemolytic streptococcal organisms are the sole agents responsible for the sequelae of acute rheumatic fever, at this time no other organisms have been definitely implicated or seem to have a causative role.

Four phases are usually seen during the development of rheumatic fever. The first phase is the initial streptococcal infection which may be subclinical or asymptomatic. A latent period of one to three weeks follows and is the second phase. Fever and the infec-

tion appear to subside, but recovery seems somewhat incomplete during this "latent period." The acute rheumatic fever episode is phase three and may present with a broad spectrum of signs and symptoms. Phase three may last a variable length of time, but two to three months is typical. Fortunately "smoldering" rheumatic fever activity which may last for several years is uncommon. Phase four is the inactive

The importance of individualization of the management of the patient with acute rheumatic fever has been emphasized. One should note the present trend toward early ambulation. Proper diagnosis, eradication of streptococcal infection, selective and judicious use of aspirin, steroids, digitalis, diuretics, diet, occupational and physical therapy and a plan of current and long-term management of the various stages of rheumatic fever have been presented. Prevention continues to be the best form of treatment for rheumatic fever. Therefore, proper diagnosis and treatment of streptococcal infections will greatly reduce the incidence of rheumatic fever and its potentially life-threatening complication, rheumatic heart disease.

or quiescent phase during which all signs of rheumatic activity have subsided. This inactive phase remains for the remainder of the patient's life unless a recurrence of rheumatic fever occurs.

Predisposing factors which increase the risk of rheumatic fever are now recognized. Siblings and close relatives of rheumatic children and offspring of rheumatic parents all have an increased predilection for rheumatic fever unexplained solely by family streptococcal disease. The incidence of rheumatic fever is greatest in cold and damp or temperate climates with the attack rate highest during winter and spring months. Environmental conditions where crowded living conditions exist, particularly in lower

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socioeconomic groups with inadequate medical care, have an increased incidence of rheumatic fever. Children between the ages of 5 and 15 years are most likely to develop rheumatic fever with the peak incidence for the initial attack between 6 and 8 years. Both sexes are equally affected with the exception of a three to one female preponderance when Sydenham's chorea exists as a manifestation of this disease. Racial differences, though playing some role, are usually merely reflectors of environmental conditions or inadequate medical attention.

Proper diagnosis of rheumatic fever is crucial since therapy is dependent upon correct diagnosis. Premature treatment without confirmation of the diagnosis may complicate or obscure the early symptoms of rheumatic fever or other diseases. The use of the modified Jones criteria² will be of great help in this situation (*Table 1*). Subclinical streptococcal infection as well as non-overt rheumatic fever will continue to cause perplexity to physicians in the management of rheumatic fever.

TABLE 1
MODIFIED JONES CRITERIA

Two major criteria or one major and two minor criteria substantiate a presumptive diagnosis of rheumatic fever if supported by evidence of previous streptococcal disease!

- A. Major criteria
1. Carditis

2. Polyarthritits

3. Chorea

4. Erythema marginatum or annularae

5. Subcutaneous nodules
- B. Minor criteria
1. Prior rheumatic fever

2. Evidence of prior streptococcal infection of recent origin

3. Positive C-reactive protein or elevated ESR

4. Fever on a recurrent basis

5. Arthralgia (without arthritis)

The presence or absence of carditis with acute rheumatic fever as well as the degree of cardiac involvement constitute the major aspects of variation in rheumatic fever treatment. The extent of carditis determines when to discontinue bed rest and begin gradual or rapid ambulation (*Table 2*). In some situations cardiac involvement is not apparent until the symptoms of acute rheumatic fever have subsided. The treatment of existing streptococcal infection is obviously important as is the prevention of subsequent episodes.³ The role of suppressive agents, di-

uretics, diet, digitalis and the use of adjunctive measures in the management of rheumatic fever also should be placed in proper perspective (*Table 2*).

During the early symptoms of "possible" rheumatic fever bed rest is indicated to allow proper observation for transitory symptoms and to protect the heart against any possible stress should cardiac involvement be present. Once the diagnosis of acute rheumatic fever has been made and throat cultures obtained a ten-day course of treatment with penicillin in therapeutic antistreptococcal dosages is recommended.⁴ Upon completion of this ten-day course a continuous prophylactic program is initiated to prevent streptococcal infections.⁵ The most satisfactory method is the intramuscular administration of 1.2 million units of benzathine penicillin G every 28 days.⁶ Oral prophylactic measures such as daily sulfadiazine or penicillin are effective if taken as prescribed; unfortunately oral medications are frequently forgotten and compliance is poor especially in the "high risk" patients, i.e. the lower socioeconomic groups and adolescents. Whether cardiac involvement is present or absent does not alter the antimicrobial therapy and massive antibiotic dosage is unnecessary and may be harmful.

Suppressive agents in the therapy of rheumatic fever have been the subject of much controversy. Most data does indicate that in the critically ill patient with fulminating carditis, corticosteroids may be life-saving. Several long-term studies^{7, 8} are available which show that no difference exists in the subsequent degree of residual rheumatic heart disease when either aspirin, steroids, or a combination of aspirin and steroids, or symptomatic therapy alone is used during the initial stages of acute rheumatic fever, particularly when only mild carditis or valvulitis exists. We do recommend steroid therapy in the child with moderately severe carditis or congestive heart failure, or both (*Table 2*).

Digitalis should be used when congestive heart failure is present. The usual dosage should be employed, but particular caution is needed because toxicity to this drug may be more prevalent. Ethacrynic acid⁹ is a new diuretic which appears to be quite effective in the treatment of acute pulmonary edema or acute rheumatic congestive heart failure. In chronic rheumatic congestive heart failure the aldosterone antagonists appear to offer certain advantages over other diuretics.¹⁰ Proper diet with no added salt should be used when moderate congestive failure exists. Severe anemia should be treated with blood replacement as would be done in a non-rheumatic patient. Iron therapy is of no apparent value for treatment of the mild anemia associated with acute rheumatic fever. Other forms of therapy are generally symptomatic and supportive in type. Occupational

TABLE 2
MANAGEMENT OF RHEUMATIC FEVER

Type of Involvement	Ambulation Schedule**				ASA	Steroids	Other Drugs
	(a) Initial 1 week	(b) Complete 3 weeks	(c) Return to School 3 weeks	(d) Sports (after checkup) 6 weeks	100-200 mg. per Kg/day in 4 equal doses \times 1 week		
I. Polyarthrititis							
II. Mild Carditis*	(a) 4-6 weeks	(b) 6 weeks if no heart (c) involve- ment		(d) after checkup 6 weeks	Same as Type I		
III. Significant carditis and/or valvulitis without car- diomegaly	(a) 2-3 months	"Individualize!" (b) 6 months	(c) 6 months	(d) Restrict 1 yr.; full activity if no or mild valve in- volvement	1. Same dose \times 2 wks. duration 2. Overlap last wk. of ster- oids as first week of ASA	1. Prednisone 2-3 mg/kg/ day p.o. in 4 equal doses and 2. Individual- ize for duration (usually 2-4 wks.)	
IV. Cardiac In- volvement and/or con- gestive heart failure (CHF)	(a) 3 months	"Individualize!" (b) 6-8 months	(c) 6-8 months	(d) Restrict indefinite- ly	Same as Type III	1. Same dose as type III 2. Usually 2-3 months du- ration	1. Digoxin (if in CHF) 0.125 mg/day maintenance 2. Ethacrynic acid 1 mg/ kg/IV every 24 hrs. 3. Spironolactone 3 mg/ kg/day

* Mild carditis (defined): Equivocal cardiac enlargement by x-ray, minor EKG abnormalities, poor quality heart sounds, grade I-II/VI apical holosystolic murmur and/or grade I-II/VI aortic diastolic "blowing" murmur.

** Ambulation Schedule: a = Initial; b = Complete; c = Return to school (d) = Sports

therapy for emotional support and physical therapy to reduce or prevent muscle disuse atrophy when severe cardiac involvement exists are aspects not to be forgotten.

Although each patient's care must be individualized, certain guidelines are necessary to follow the clinical course in its acute, subacute and convalescent or recovery periods. The clinical findings, temperature, sedimentation rate, sleeping pulse, activity studies and the clinical "subjective feelings" of the patients are all important factors in the acute and subacute stages of rheumatic fever. Normalcy of temperature, subjective well-being, suppressed erythrocyte sedimentation rate, negative C-reactive protein, increased appetite and weight gain may all be effects of steroids and must not be misinterpreted as disease inactivity. Serum muco-protein and protein-bound polysaccharides parallel disease activity and are least affected by conventional methods of treatment with steroids.³ The erythrocyte sedimentation rate may be normal in the presence of profound congestive heart failure. The return of the nocturnal pulse rate to normal is of value when used with other findings. Once all such facets of treatment are considered and the rheumatic process appears quiescent or minimal, then gradual ambulation should be instituted. In general, a patient should not be started on ambulation until steroids have been discontinued (*Table 2*).

Management of the symptoms of rheumatic fever, as well as the convalescent phase of acute rheumatic fever and rheumatic heart disease, must again be individualized. Sydenham's chorea, erythema marginatum and subcutaneous nodules subside with no or symptomatic treatment and leave no sequelae. Emotional support, simplicity of environment and mild sedation, as well as expectant treatment are most important in the management of chorea. Usually this latter manifestation of rheumatic fever subsides in four to six weeks and full normal activity is allowable two to three months after the initial episode. Erythema marginatum and subcutaneous nodules usually reflect a serious form of acute rheumatic fever and almost invariably heart involvement is present. Rheumatic heart disease requires follow-up with clinical assessment of murmurs to determine the degree of valvular involvement, response to medication and overall progress on a serial basis. Long-term prognosis should await subsidence of the acute rheumatic fever process. Surgical intervention in the pediatric patient is rarely needed and should be reserved for the child with unrelenting congestive heart failure not responding to intensive medical management.

References

1. Diehl, A. M.; Lade, R. I. and Hamilton, T. R.: Epidemiology of rheumatic fever. *Am. J. Card.* 1:423-435, April, 1958.

2. Jones Criteria (revised) for Guidance in the Diagnosis of Rheumatic Fever. Ad Hoc Committee American Heart Association Monograph: 1-8, 1965.

3. Diehl, A. M. and Hamilton, T. R.: Clinical aspect of rheumatic fever in *Cardiology*, edited by A. A. Luisada, Vol. 3, Chapter 7, p. 28-46, 1959.

4. *Streptococcal Infections in the General Population*. AHA Monograph II:4, 1968.

5. *Prevention of Rheumatic Fever*, American Heart Association Monograph, I:1-3, 1968 (Committee on Prevention of Rheumatic Fever and Bacterial Endocarditis of the Council on Rheumatic Fever and Congenital Heart Disease of the American Heart Association).

6. Diehl, A. M.; Petry, E. L.; Lauer, R. M. and Hamilton, T. R.: The prevention of recurrence of rheumatic fever. *Am. Family Phys. G.P.* 26:143-149, September, 1962.

7. The Natural History of Rheumatic Fever and Rheumatic Heart Disease; Ten Year Report of Clinical Trial of ACTH, Cortisone and Aspirin. United Kingdom and U. S. Joint Report on Rheumatic Heart Disease. *Circulation* 32: 457, September, 1965.

8. Combined Rheumatic Fever Study Group: A Comparison of the Effect of Prednisone and Acetylsalicylic Acid on the Incidence of Residual Rheumatic Heart Disease. *New Eng. J. of Med.* 262:895-902, 1960.

9. Spangler, A. W.; Friedberg, D. E., and Nadas, A. S.: The use of ethacrynic acid in infants and children with congestive heart failure. *Pediatrics* 42:291, 1968.

10. Seller, R. H.; Swartz, C. D.; Ramirez-Muxo, O.; Grest, A. H., and Moyer, J. H.: Aldosterone antagonists in diuretic therapy: their effect on the refractory phase. *Arch. Int. Med.* 113:350, 1964.

Suggested General Reference

Markowitz, M. and Kuttner, A. G.: *Rheumatic Fever: Diagnosis, Management and Prevention*. W. B. Saunders, publisher, 1965.

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Dyslexic Children

The Physician's Role in the Identification of Specific Dyslexia

CLIFTON W. WOLF, Ph.D.,* *Kansas City*

SPECIFIC DYSLLEXIA is a reading disability that occurs in children who have adequate intellectual abilities and who do not evidence demonstrable neurological disorders or primary psychiatric problems. These children, generally speaking, have received adequate reading instruction in school, but because of certain underlying psychoneurological insufficiencies, do not profit from conventional reading instruction which is appropriate for the majority of children.

Definition of Dyslexia

The research committee of the World Federation of Neurology (Crichtley, 1968) defined specific dyslexia as follows:

A disorder manifested by difficulty in learning to read despite conventional instruction, adequate intelligence, and socio-economic opportunities. It is dependent upon fundamental cognitive disabilities which are frequently of constitutional origin (p. 2).

In another publication, Crichtley (1964), a neurologist with an international reputation in the field of specific dyslexia, states that specific dyslexia is genetically determined and not a manifestation of brain injury, low I.Q., or psychiatric disturbance.

In reading the literature, note should be made that specific dyslexia is also referred to as specific language disability (SLD), developmental dyslexia, or dyslexia.

Hinshelwood (1895), a London physician, was one of the first investigators to call attention to dyslexia, or "word-blindness" as it is generally referred to in England. Samuel Orton, an American neurologist, did pioneering research on dyslexia or strephosymbolia (his term). His primary research studies have been compiled and published by the Orton Society (Orton, 1966), an organization which has sponsored major research and remediation on dyslexia.

Characteristics of Dyslexia

The educational characteristics of dyslexia are difficulties in (1) phonetic analysis of words, (2) oral

reading accuracy, (3) spelling, and frequently (4) handwriting. Within the first semester of the first grade, many dyslexic children are falling behind their peers in the acquisition of reading skills, particularly in regard to phonetic analysis. The development of a sight vocabulary is slow and laborious for many dyslexics in the first grade. Behaviorally, the teacher may report that the child is inattentive, unmotivated, immature, or a daydreamer, none of which explains the reading problem.

Some dyslexic children reverse words, e.g., "was" for "saw" and confuse such letters as "b," "d," "p," and "q." These traits may occur occasionally in the normal child during the first grade; however, if they persist, one may begin to suspect a dyslexic condition.

A major factor in the consideration of the presence of dyslexia is that the child, who has adequate intelligence and emotional health, fails to acquire reading skills commensurate with his peers.

Prevalence of Dyslexia

Estimates on the prevalence of dyslexia vary; a number of authorities estimate that approximately 10 per cent of the school population have dyslexia in one degree or another (Bryant & Patterson, 1962; Gallagher, 1960; Gillingham & Stillman, 1956; Ketchum, 1959). A few incidence studies, however, have been done. Malmquist (1960) found that 8.5 per cent of 399 first grade children were dyslexic; Faigel (1965) evaluated 256 children in grades two through six in one elementary school and noted that 13 per cent were dyslexic; and Walker and Cole (1965) studied 225 prescreened children in a school population consisting of families from the above-average socioeconomic classification and found that 25 per cent of them were dyslexic. A review of the literature (Wolf, 1968) reveals that most authorities report a much larger number of males than females have dyslexia.

Medical Diagnostic Responsibility

Most of the research and diagnostic studies on dyslexia have been done in medical settings and pub-

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lished in medical journals. Consequently, public school educators have been relatively unaware of this reading disability. The practicing physician should, therefore, assume some responsibility in the recognition of dyslexia in his patients who may present symptoms of learning difficulties of one type or another. This is especially true of reading disability since academic success at all levels of education is so dependent upon adequate reading ability.

The family physician, pediatrician, ophthalmologist, and to a lesser degree the neurologist or the psychiatrist, is frequently contacted by the parents of a child with a reading problem. The chief concern of these parents is that there may be a medical basis to the reading disability. For the most part, the examination does not reveal a medical basis. This does not, however, preclude the physician from assuming some role or authority in determining the reasons for the reading disability. For example, the medical history and the physical and neurological examinations can rule out medical factors as the basis for the problem. The child's physician may wish to investigate other medical possibilities by consulting an ophthalmologist or an audiologist. Most studies, e.g., Cole and Walker (1964), indicate no difficulties in the visual aperture or the mechanism of hearing as related to dyslexia. The physician may then suspect some degree of mental retardation and request an intellectual evaluation by a psychologist or school counselor. The literature, however, fails to substantiate a relation between mental retardation and specific dyslexia.

Diagnostic Screening for Dyslexia

After having ruled out medical problems, low I.Q., vision and hearing difficulties, the physician may elect to perform a screening evaluation of the reading disorder. An easily administered test such as the Wide Range Achievement Test (Jastak & Jastak, 1965) can be helpful as it provides grade level scores on word recognition, spelling, and arithmetic computation from kindergarten to the collegiate level. The dyslexic child or adolescent will be one or more years below grade level *both* in word recognition and in spelling but at or near grade level in arithmetic computation.

Evaluation of oral reading ability will be more difficult for the physician as some degree of skill is needed to administer and score tests for this ability. Generally speaking, the dyslexic child is a word-by-word reader and the most frequent reading error is word substitution, e.g., "was" for "saw," "black" for "back," "done" for "gone," and "when" for "then" or "where." Additionally, gross word substitution errors are made.

In regard to spelling, the dyslexic person at-

tempts to spell how he thinks the word sounds. When inspecting a list of spelled words, the physician may note bizarre spelling errors, i.e., spelled words that have little resemblance to the words presented. Occasionally, a letter will be reversed, particularly if the child uses printing.

Ideally, it would be well for the physician who suspects dyslexia to refer the patient to a professional person trained in the differential diagnosis of learning problems. Since few people are trained in this field, the physician will have to guide his patient through a series of examinations if for no other reason than to rule out certain variables.

Caution should be taken, however, in assuming that the child is basically to blame for his reading problem because of poor attention and interest or poor motivation. Very few reading problems result from these factors. Another caution concerns the assumed primary psychiatric basis to poor reading. Most children, however, who do poorly in reading will eventually develop secondary psychiatric symptoms as continued frustration and failure will demoralize most children. If psychotherapy is instituted for a dyslexic reader, the result will most likely be a well adjusted poor reader.

Counselling With the Family

When a diagnosis of dyslexia is made, parents should be informed about the disability. Parents of an underachieving child frequently apply considerable pressure on the child to achieve. When informed about the diagnosis, they frequently respond with guilt, shame, or anxiety. These feelings can be dealt with in a rather straightforward manner by the physician.

The dyslexic child or adolescent has developed certain feelings and attitudes indicative of inadequacy or inferiority. The physician and parents can help the dyslexic person resolve these problems by informing the child that he is not "dumb," "stupid," or whatever self-concept the child may have internalized. This is more difficult, however, with the adolescent who has experienced many frustrating years of academic failure.

Remediation

The problem of retraining the dyslexic child in reading and spelling cannot be adequately dealt with in this article as successful programs are quite involved and technical. The basic approach to reading is an alphabetic-phonetic system of establishing correct sound-symbol associations. In moderate to severe cases, a one-to-one ratio, i.e., one teacher working with one child for approximately 50 minutes per day, five days per week, is recommended. Since dys-

lexia is difficult to overcome, it generally takes approximately two years of retraining. Severe cases require more time. Although many of the basal readers used in education do involve some phonetic analysis training, the emphasis is too minimal to be effective with the dyslexic person, otherwise, the physician would seldom see a dyslexic patient.

The physician, however, may be instrumental in encouraging school teachers in their community to seek professional training in remediation of dyslexia. One of the few institutions that trains teachers of dyslexic children that this author is acquainted with is the Texas Scottish Rite Hospital, Dallas, Texas.

References

Bryant, N. D. and Patterson, P. R.: Reading disability: Part of a syndrome of neurological dysfunction. Paper presented at the meeting of the International Reading Association, San Francisco, May, 1962.

Cole, E. M. and Walker, L.: Reading and speech problems as expressions of a specific language disability. In D. Mck. Rioch and E. A. Weinstein (Eds.), *Disorders of Communication*, Vol. 42. Research Publication of the Association for Research in Nervous and Mental Disease. Baltimore: The Williams & Wilkins Company, 1964, p. 171-189.

Critchley, M.: *Developmental Dyslexia*. London: William Heinemann Medical Books Limited, 1964.

Critchley, M.: *Report of the World Federation of Neurology's Research Group on Developmental Dyslexia and*

World Illiteracy. Dallas: The Scottish Rite Hospital for Crippled Children, April, 1968.

Faigel, H. C.: Language disability. *Am. J. Dis. Child.* 110:258-264, 1965.

Gallagher, J. R.: Specific language disability (dyslexia). *Clinical Proceedings of the Children's Hospital* 16:3-15, 1960.

Gillingham, A. and Stillman, B. W.: *Remedial training for children with specific disability in reading, spelling and penmanship*. Cambridge: Educators Publishing Service, Inc., 1956.

Hinshelwood, J.: Word-blindness and visual memory. *Lancet* 2:1564-1570, 1895.

Jastak, J. F. and Jastak, S. R.: *Manual: The Wide Range Achievement Test*. Wilmington, Del.: Guidance Associates, 1965.

Ketchum, E. G.: Reading disorders. In W. E. Nelson (Ed.), *Textbook of Pediatrics*, 6th edition. Philadelphia: W. B. Saunders, 1956, p. 1144-1147.

Malmquist, R.: Factors related to reading disabilities in the first grade of the elementary school. *Stockholm Studies on Educational Psychology*, Vol. 2. Stockholm: Malmquist and Wilksell, 1960.

Orton, S. T.: *"Word-blindness" in School Children and Other Papers on Strophosymbolia (Specific Language Disability-Dyslexia)*, 1925-1946. Pomfret, Conn.: The Orton Society, Inc., 1966.

Walker, L. and Cole, E. M.: Familial patterns of expression of specific reading disability in a population sample. *Bulletin of the Orton Society* 15:12-24, 1965.

Wolf, C. W.: A statistical study of specific dyslexia—characteristics and syndrome patterns. Unpublished doctoral dissertation, University of Houston, 1968.

Respiratory Distress

(Continued from page 96)

3. Chu, J.; Clements, J. A.; Cotton, E. K., et al.: Neonatal pulmonary ischemia. *Pediatrics* 4:709-766, October, 1967.

4. Varghese, P. J.; Celermajer, J.; Izvkawa, T., et al.: Cardiac catheterization in the newborn. Experience with 100 cases. *Pediatrics* 44:24-29, July, 1969.

5. Boston, R. W.; Geller, F. and Smith, C. A.: Arterial blood gas tensions and acid base balance in the management of the respiratory distress syndrome. *J. Ped.* 68:74-89, January, 1966.

6. Strang, L. B.: The pulmonary circulation in the respiratory distress syndrome. *Pediat. Clin. N. Amer.* 13:693-701, August, 1966.

7. Strang, L. B. and MacLeish, M. H.: Ventilatory failure and right-to-left shunt in newborn infants with respiratory distress. *Pediatrics* 28:17-27, July, 1961.

8. Rudolph, A. M. and Yuan, S.: Response of the pulmonary vasculature to hypoxia and H⁺ ion concentration changes. *J. Clin. Invest.* 45:399-411, 1966.

9. Downing, S. E.; Talner, N. S. and Gardner, T. H.: Influences of hypoxia and acidemia on ventricular function of the newborn lamb. *Circulation* 32, Supp. 2:78, October, 1965.

10. Chu, J.; Clements, J. A.; Cotton, E., et al.: The pulmonary hypofusion syndrome. *Pediatrics* 35:733, May, 1965.

11. Talner, N. S. and Ordway, N. K.: Acid-base balance in the newborn infant with congestive heart failure. *Pediat. Clin. N. Amer.* 13:983-999, March, 1966.

12. Gersony, W. M.; Duc, G. V. and Sinclair, J. C.: "PFC" syndrome (persistence of the fetal circulation). *Circulation* 39, Supp. 3:87, October, 1969.

13. Russell, G. and Cotton, E. K.: Effects of sodium bicarbonate by repeat infection and of oxygen in high

concentration in respiratory distress syndrome of the newborn. *Pediatrics* 41:1063-1073, June, 1968.

14. Usher, R.: Reduction of mortality from respiratory distress syndrome of prematurity with early administration of intravenous glucose and sodium bicarbonate. *Pediatrics* 32:966-975, December, 1963.

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Renal Angiography

—Past and Present, With Special Reference to the Forward Venogram

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BEFORE THE DEVELOPMENT of the percutaneous catheter technique in 1953, it had been the practice to study the renal vessels by translumbar approach with a long aortogram needle, injecting directly into the aorta. The Seldinger¹ method for passage of a catheter usually is by way of the femoral artery or, in the event of narrowed or obstructed lower abdominal vessels, the approach may be made by way of the axillary artery. To further facilitate passage through narrow and tortuous vessels, Judkins² developed a guide wire with a 7 millimeter curved soft tip. This has proved to be of very significant value in allowing facile, safe passage of the guide wire without the risk of perforation of a vessel where obstruction is encountered.

The goal of many examiners is the degree of contrast which is displayed in the films; and the faster the contrast could be delivered, the better!³ The methods for obtaining this are described in such terms as milliliters of contrast at a particular concentration, usually 30 to 75 per cent, and the injection pressures used. The toxic dose was referred to in terms of milliliters per kilogram of body weight. Much has been written about the relative toxicity of the various contrast media, but little about the control of the concentration after dilution in the blood.^{4, 5} The current books describe the injections employed in the aortography and selective renal angiography in such terms as 15 to 30 milliliters of contrast material, 75 per cent in a pressure injector for aortography; and for selective renal arteriogram with a catheter in the renal artery, 5 to 8 cc of contrast material, not over 60 per cent is injected by hand.^{6, 7} It is to be emphasized that the remarks above relating to the use of contrast material give little, if any, insight into the concentration that eventually comes in contact with the capillaries of the organs.

Some workers in this area have become aware that one of the most toxic effects of contrast material is related to its hypertonic nature and is directly pro-

portional to concentration and quantity of contrast material entering the vessel.⁸ In order to produce the best quality angioneurographic phase in the kidneys, a considerable amount of contrast material has to be injected, but it must not be given in too concentrated form. Persistence of the angioneurographic effect can mean kidney damage.⁹ One can obtain a satisfactory venogram of the renal circulation with an adequate amount of contrast material of a safe concentration, determined by considering the injection rate in terms of milliliters per second of a known concentration into a volume of blood flow in similar terms of milliliters per second, giving some idea of the eventual concentration of contrast in the blood that reaches the parenchyma.

It can scarcely be argued that a catheter, with numerous sideholes, in the abdominal aorta produces more controlled and uniform dilution of contrast than, for example, a needle via the translumbar route. This may be further improved by attention to the size and position of the catheter side and end holes.¹⁰ There are now at least three pressure injectors available for angiography calibrated to read in milliliters per second. Even without these, one can and should know in advance such information about the pressure injector he employs as related to the particular catheter in use, and the approximate flow rate of the blood at the site of contrast injection.

The following cases illustrate the possibility and character of the venography accomplished by such considerations. In these cases, there has been no evidence of kidney damage observed subsequent to the study, as was the case in earlier studies by another writer who used concentrated solutions injected with high pressure and did likewise show, however, the venous phase of the renal angiogram.⁹

When one considers the concentration of contrast material necessary to provide a diagnostic image on the film, and attempts to stay as near to or only slightly above this figure, one appreciates that there is a fairly wide latitude between the contrast concentrations obtainable and the contrast concentrations necessary for diagnosis. There are several publica-

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Figure 1. Retrograde venography of the right renal vein. The selective catheter has bounced out of the renal vein as a result of the injection pressure. The film made during the injection process, however, shows the renal vein and its major branches.

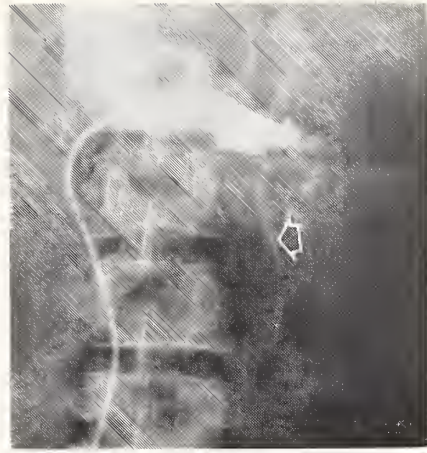


Figure 2. A retrograde selective venogram of the left renal vein, with an exposure made during the injection which reveals, in addition to the renal vein which was flooded, some reflux into the vena cava and into the origin of the right renal vein as well. There is also demonstration of the ovarian vein indicated by the arrow.

tions which provide guidelines to the toxicity, in terms of concentration of contrast and volume of the same.^{11, 12} It is, however, imperative that the operator of the injection apparatus be knowledgeable of the rate of contrast injection in terms of milliliters per second with the particular catheter employed under the situation used. Admittedly, the application of these ideas infers basic knowledge of the blood flow in the vessels being studied. In the present stage of the art, this knowledge cannot easily be obtained with accuracy; but effort is being made for improvement in this direction, and educated guesses are better than no estimate at all.

With these ideas in mind, we have arrived at the practice for selective renal angiography using approximately 25 to 30 milliliters of Conray, diluted from its original 60 per cent concentration to approximately 40 to 45 per cent and injected at a rate of 8 to 10 milliliters per second. Some idea of the rate of blood flow is gained from a hand-injected test under fluoroscopy for evaluating the placement and delivery of the catheter. The large volume is needed to saturate the capacity of the tubules to take up contrast material and, thereafter, to allow some to pass on through into the venules and larger veins, eventually giving an excellent angioneurographic view, followed by a good venous phase. We have accomplished this with 20 milliliters of 35 per cent Conray at 10 milliliters per second. One should, of course, be able to avoid occluding the renal artery with the catheter and thereby avoid direct injection of the full concentration of the contrast material into the renal artery.

While venography by the percutaneous approach

through the femoral vein may be considered, it would appear to be contraindicated if one has a suspicion of renal tumor.^{13, 14} This would be true both from a risk of dislodging tumor cells by the forcible injection and from the possible false negative result from failure to demonstrate the veins within the kidney. An example of information usually obtained from this type of venogram is illustrated in *Figures 1 and 2*.

An aortogram usually precedes a selective renal arteriogram. The usual aortic injection, however, seldom shows the renal veins. Notable exceptions to this situation are illustrated in *Figures 3, 4 and 5*. One of the cases (*Figures 3 and 4*) was accomplished by the axillary artery route because of the obstruction of the abdominal aorta immediately below the renal vessels. Thus, an extra volume of contrast material was available directly above the renal vessels. The other case, shown in *Figure 5*, was deliberately planned by using a large volume, 80 milliliters, of contrast material injected over a period of approximately $2\frac{1}{2}$ seconds, so that a fairly long bolus of the contrast material diluted with blood was available to the renal vessels. The most satisfactory studies, however, are of course made by the selective renal arteriography, as illustrated in *Figures 6 through 12*.

Discussion and Conclusions

A brief review of the development of and perfection of renal angiography has been given. Significant improvements in technique have occurred in the past 15 years, resulting in an increase in information pro-



Figure 3. Aortogram with a catheter passed by way of the left axillary artery and the tip resting near the obstruction in the abdominal aorta. Two renal arteries are seen on the right, the upper indicated by the black arrow, the lower by the white arrow which points to the stenotic origin of this vessel. A single renal artery is seen on the left, indicated by the curved black arrow pointing to a narrowing at the origin of the vessel also. For this study, 50 mls. of Conray 60 was injected at a rate of 20 mls. per second.

vided by the procedure and increased safety to the patient. A thorough knowledge of these technical improvements should be part of the equipment with which the procedure is approached.

The language which is applied to evaluation of toxic reactions to contrast material should be chosen carefully, to be meaningful. Better knowledge of blood flow rates under actual clinical conditions and utilization of this information in deciding on injection rates and concentrations of contrast employed are among the most important factors to be reckoned with. The final concentration of contrast bolus in the blood must be estimated as accurately as possible.



Figure 5. A forward venogram was done in this case because of previously tied femoral veins bilaterally. For this study, 100 mls. of Conray 60 was injected in the aorta above the renal vessels at a rate of 35 mls. per second. The film reproduced here late in the serial program shows contrast material in the renal veins bilaterally.



Figure 4. A late film in the same series as *Figure 3*, showing the renal vein particularly well on the right. The blood supply to the left kidney appears to be considerably less, and this is reflected in lesser contrast of the angioneurographic phase, and the left renal vein is less evident.

Fortunately, diagnostic films may be obtained over a fairly wide range of contrast concentration in the blood, i.e., 15 to 30 per cent, with safety. The more concentrated the solution employed, the more attention is required to obtain good dilution to a safe level before the bolus leaves any major vessel. It is considered safer to inject a diluted contrast more rapidly to attain the same final concentration than might be obtained by injecting a concentrated bolus of contrast more slowly.

By using a large bolus of diluted contrast, it is possible to safely obtain better angioneurographic phase. It is also possible to safely obtain a forward venogram of the kidney this way. This suggests little need for such an approach as outlined by Haverling,¹⁵ involving occlusion of the aorta.

It is very helpful to precede all selective renal arteriograms by an aortic study, to determine the



Figure 6. Arterial phase of a selective left renal arteriogram, in which 20 mls. of 35 per cent Conray was injected at the rate of 10 mls. per second.

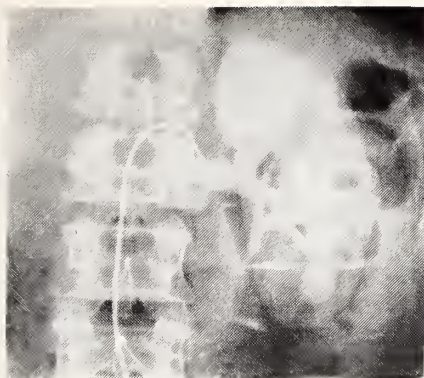


Figure 7. A late film in the same series as Figure 6, clearly showing the left renal vein and its branches within the pelvis and, to some extent, within the parenchyma of the kidney.

number and exact location and condition of the renal vessels and to make way for easy passage of the selective catheter.

In the case of probable tumor or renal thrombus, a forward venogram is considered safer than a retrograde via the vena cava. A forward venogram has been previously recommended.¹⁶ The quality of such a study can also be adequate (Figure 12).

The demonstration of tumor vessels is facilitated with the selective injection of a small amount of adrenalin into the renal artery immediately before injection of the contrast media. The usual dose is in the range of 0.2 milliliter of 1/10,000 adrenalin.¹⁷ The renal venogram is better accomplished before such an injection of adrenalin, as the flow through the kidney is significantly reduced via the normal vessels by the drug for several minutes (Figure 13).

Statements such as Vollmer's,¹⁸ suggesting that since smaller quantities of Conray 80 need to be injected, the risk inherent in renal vasography is less-



Figure 9. Angionephrographic phase of same case as Figure 8, clearly outlining a relative avascular cystic lesion in the mid-portion of the kidney and another cyst in the region of the upper pole not previously recognized by IVP or radioactive scan.

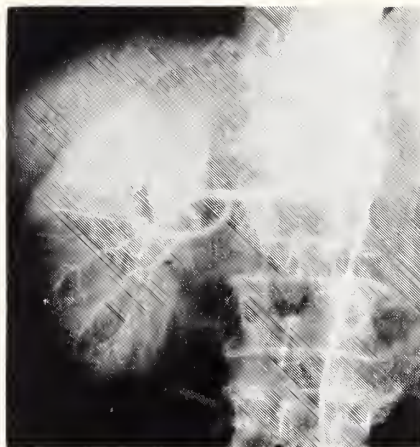


Figure 8. Arterial phase in the selective right renal angiogram illustrating how much more clearly the arteries are seen before the parenchyma becomes opacified. Compare with Figure 9.

ened, are regarded by this writer as misleading and dangerous; such statements do not take into account the concentration in the blood that reaches the kidney capillaries.

References

1. Seldinger, S. I.: Catheter replacement of the needle in percutaneous arteriography. A new technique. *Acta Radiologica* 39:368-376, 1953.
2. Judkins, M. P.; Kidd, H. J.; Frische, L. H. and Dotter, C. T.: Lumen-following safety J-guide for catheterization of tortuous vessels. *Radiology* 88:1127-1130, 1967.
3. Pride, Ronald B. and Klevenhagen, S.: Evaluation of the new contrast medium urovision. *Acta Radiologica* 8, Fasc. 1:87-95, 1969.
4. Idbohrn, Hans: Tolerance to contrast media in renal angiography. *Acta Radiologica* 45:141-154, 1956.



Figure 10. A late film in this same series as Figures 8 and 9. The cysts are again even more clearly seen, and at this time, the right renal vein is also well demonstrated, as indicated by the curved black arrow. For this study, 30 mls. of 45 per cent Conray was injected at 10 mls. per second.



Figure 11. A selective left renal arteriogram showing a large cyst in the upper pole. 30 mls. of Conray 40 per cent was injected at 10 mls. per second.

5. Törnell, Gunner: Spinal cord tolerance of roentgen contrast media particularly during aortography with temporary occlusion of the aorta. *Acta Radiologica* 8:257-283, 1969.

6. Olsson, Olle: Techniques and hazards of renal angiography. *Angiography* 2:541, publ. by Abrams. Boston: Little Brown, 1961.

7. Bartley, O.; Bengtsson, U. and Cederbon, G.: Renal function before and after urography and angiography with large dose of contrast media. *Acta Radiologica* 8:9-16, 1969.

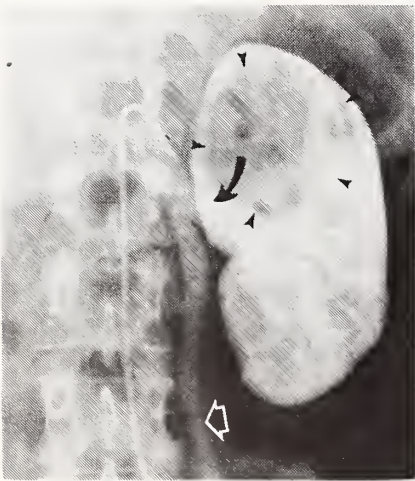


Figure 12. A late phase in the same arteriogram as Figure 11, showing good outline of the avascular cyst in the upper pole, and excellent demonstration of the left renal vein and its principal branches, as well as the left ovarian vein.

8. McAfee, John G. and Wilson, James K. V.: Review of complications of translumbar aortography. *Am. J. of Roent.* 75:956-970, 1956.

9. Helander, Carl-Gustaf: Nephrographic effect and renal arteriographic damage. *Acta Radiologica Supplement* 163:4-87, 1958.

10. Susman, Noah; Wallace, B., Jr. and Diboll, M. M. E.: Fluid dynamics in the tip of the multiholed angiographic catheter. *Radiology* 92, No. 4:843-848, 1969.

11. Edling, N. P.; Helander, C. G.; Person, F. and Asheim, A.: Renal function after selective renal angiography. *Acta Radiologica* 51:161-169, 1959.

12. Edling, N. P. G. and Helander, C. G.: Nephrographic effect in renal angiography. *Acta Radiologica* 51:17-24, 1959.

13. Margolis, G.; Tindell, G. T.; Phillips, R. L.; Kenan, P. D. and Grinson, K. S.: Evaluation of roentgen contrast agents used in cerebral arteriography. *J. Neurosurg.* 15:30-44, 1958.

14. Ahleberg, M. E.; Bartley, O. and Wahlquist, L.: Angiographic diagnosis of tumor thrombus in the main trunk of the renal vein in renal carcinoma. *Acta Chirurgica, Scandinavia* 132:362-369, 1966.

15. Haverling, M.: Renal phlebography. *Acta Radiologica, Supplement* 251, 1966.



Figure 13. Arterial phase of a selective left renal angiogram showing the abnormal vascular pattern of a renal cell carcinoma occupying the upper pole of the kidney, as indicated by the black arrow. The injection was made approximately one minute after a small injection of adrenalin had been given through the catheter. The constricting effect on the normal vessels indicated by the white arrow is evident.

16. Büchler, E.; Dux, A. and Thurn, P.: Die Röntgendiagnostik der Nierenvenenthrombose. *Fortschritte auf dem Gebiete der Roentgenstrahlen und Nuklear Medizin*, bd. 106.S:800-811, 1967.

17. Sorby, W. A.: Renal Phlebography. *Clinical Radiology* 20:166-172, 1969.

18. Vollmer, K. W.: Die Bedeutung des Röntgenkontrastmittels in der Technik der Nierenangiographie. *Arzneimittel Forschung*, bd. 14.S:303-307, 1964.

Renal Cell Carcinoma

. . . *An Endocrine-Influenced Tumor:* *Analysis of 243 Cases*

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Renal cell carcinoma is primarily a disease of later life with peak incidence in the sixth and seventh decades. Women comprise 30 per cent of the cases reported in this series and men 70 per cent. Women had a significantly better survival rate than men at each yearly interval ($p < 0.01$). There was no relationship between age at diagnosis and clinical stage of disease. Survival rates for all stages were: five-year, 16.8 per cent; ten-year, 6.3 per cent; fifteen-year, 2.9 per cent; and twenty-year, 0.4 per cent. Survival has *not* improved during the 20 years of this study. As expected, patients in Stage I and II survived longer than Stage III and IV patients; those with Stage I and II disease survived even longer if a primary resection was done. Postoperative radiotherapy increased survival percentages in the first five-year period, but not thereafter. Younger patients, regardless of stage of disease at diagnosis, survived longer than older patients, as would be expected. A number of patients (21/243) lived with their disease and died of it more than five years after diagnosis; five of these 21 survived more than ten years. The difference in incidence between men and women, the difference in survival between the two sexes, and recent reports of prolonged control of this disease with sex hormones place renal cell carcinoma in the realm of endocrine influenced tumors.

RENEWED INTEREST HAS DEVELOPED in renal cell carcinoma in recent months because of new knowledge

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about etiology and treatment. Even in this tumor has tobacco been implicated as a possible causative agent.¹ The prognosis of the patient with renal cell carcinoma is widely varied because the natural history of the disease may be one of rapid decline and death, or it may be one of indolent coexistence of tumor with host. This disparity makes statistical data difficult to evaluate, especially in small series. In general, however, the prognosis is poor if the tumor cannot be completely resected.

Many features have been correlated with the survival of patients with this tumor. Most of these features measure indirectly the likelihood of metastatic tumor in the patient. The size of the tumor at diagnosis is related to survival rate, with patients having smaller tumors living longer. This is probably due to the fact that smaller tumors are less likely to metastasize.² Kay has shown that patients with tumors less than five centimeters in diameter have a five-year survival rate of 75 per cent.³

The histologic type, either clear-cell or granular-cell, the microscopic architecture, and the cell grade have all been correlated with survival. Generally, it has been shown that the clear-cell type of tumor has a better prognosis.⁴ Böttiger, in a series of 48 patients revealed that the clear-cell variety of carcinoma had a higher incidence of fever than the granular-cell type.⁵ Tumors arranged in cords and strands have a better prognosis than the more anaplastic forms, and lower-grade cell types have a bleaker outlook.^{4, 6}

As with most malignancies, the presence of local invasion, regional lymphatic metastases, or distant metastases decreases the survival rate. Flocks and Kadesky staged renal cell carcinoma and tabulated the following survivals:⁷

5-Year Survival
PER CENT

Stage I	Limited to the renal capsule	46.0
Stage II	Invasion of the renal pedicle and/ or fat	37.0
Stage III	Regional lymphatic involvement . .	9.5
Stage IV	Distant Metastases	3.5

Grabstald, using a slightly different staging plan, reports these five-year survivals:⁸

	5-Year Survival PER CENT
Stage A. Tumor capsule visible and surrounds the tumor	71.0
Stage B. The tumor had broken its own capsule, but was within the renal capsule	68.7
Stage C. Renal capsule infiltrated, tumor sometimes involved renal veins, lymph nodes, adjacent muscle or viscera, or perinephric tissue ..	33.0
Stage D. Distant metastases	6.0

Kay reported that only 25 per cent of those patients whose tumor had invaded the renal capsule survived five years, while 63.3 per cent of the patients whose tumor had remained within the confines of the capsule were alive after five years.³

Renal cell carcinomas have a peculiar proclivity for invading the renal vein and at times extend to the inferior vena cava and even to the right atrium. The presence or absence of renal vein invasion has been shown to affect the prognosis of patients. Twenty-four to 54 per cent of patients with renal cell carcinoma are reported to have renal vein invasion.^{2, 6, 9} The five-year survival rate for renal vein invasion versus no vessel involvement is 55.4 and 29 per cent respectively according to McDonald.² Others have reported similar results.^{6, 9} McDonald has shown that the younger age groups survive longer than the older, and Talley could show no difference between the sexes.^{2, 10}

Survival for all patients with renal cell carcinoma is relatively poor. Flocks and Kadesky reported that 23 per cent of 305 cases with renal cell carcinoma survived for five years. Five-year survival rates for those who undergo nephrectomy are between 30 and 50 per cent.^{3, 4, 6, 7, 11, 12} Robson reported a five-year survival of 66.5 per cent in a small series.¹³

Material and Methods

At the University of Kansas Medical Center 243 cases of renal cell carcinoma have been reported to the Tumor Registry from 1949 to 1969. There have been 170 men (69.9%) and 73 women (30.1%). Only one patient was lost to follow-up. The number of patients in their respective age groups are as follows:

Age	Number of Cases
10-20	0
20-30	3
30-40	13
40-50	36
50-60	70
60-70	71
70-80	40

80-90	10
90-100	0

The youngest patient was 22 years old and the oldest was 89 years old. As can be seen, the largest numbers of cases are observed in the 50-70 age group.

The tumors have been staged in a manner similar to Flocks and Kadesky.⁷ Following is a description of the staging and the number of cases in each stage:

Stage I	Local only	49 patients
Stage II	Invasion into surrounding tissue	72 patients
Stage III	Metastases to regional lymph nodes	15 patients
Stage IV	Generalized carcinoma	90 patients
Unknown	17 patients

Survival statistics are computed by the life-table method. Statistical significance was computed, where applicable, by Student's t-test.

Results

There was no correlation discernable between the age of the patient at diagnosis and the stage of his

TABLE 1 AGE AT DIAGNOSIS VERSUS STAGE AT DIAGNOSIS		
Stages I & II		
AGE AT DIAGNOSIS		NUMBER OF CASES
10-20		0
20-30		1
30-40		7
40-50		22
50-60		32
60-70		35
70-80		17
80-90		7
90-100		0
Stages III & IV		
AGE AT DIAGNOSIS		NUMBER OF CASES
10-20		0
20-30		2
30-40		6
40-50		10
50-60		33
60-70		32
70-80		19
80-90		3
90-100		0

TABLE 2
SURVIVAL RATES FOR ALL CASES

Year Past Diagnosis	Total Number of Cases	Per Cent Survival
0	239	100.0
1	111	46.5
2	77	32.2
3	62	24.9
4	52	21.8
5	40	16.8
6	38	15.9
7	30	12.5
8	24	10.0
9	19	8.4
10	15	6.3
11	12	5.0
12	11	4.6
13	10	4.2
14	9	3.8
15	7	2.9
16	4	1.7
17	3	1.3
18	2	0.8
19	2	0.8
20	1	0.4

TABLE 3
SURVIVAL FOR CASES
DIAGNOSED AT 5-YEAR INTERVALS

Year Past Diagnosis	1948-1953		1954-1958		1959-1963	
	SURVIVING No.	%	SURVIVING No.	%	SURVIVING No.	%
0	40	100.0	56	100.0	69	100.0
1	24	60.0	32	57.2	31	45.0
2	15	37.5	23	41.0	24	34.8
3	12	30.0	20	35.4	21	30.4
4	11	27.5	18	32.1	17	24.6
5	11	27.5	14	25.0	12	17.4
6	10	25.0	14	25.0	11	16.0
7	9	22.4	10	17.9	8	11.6
8	9	22.4	9	16.0	3	4.3
9	8	20.0	5	8.9	3	4.3
10	7	17.5	4	7.2	1	1.5
11	6	15.0	4	7.2		
12	6	15.0	3	5.4		
13	6	15.0	3	5.4		
14	6	15.0	3	5.4		
15	6	15.0	1	1.8		
16	4	10.0				
17	3	7.5				
18	2	5.0				
19	2	5.0				
20	1	2.0				

disease (Table 1). The survival rates of all patients seen from 1949 to March 1969 are: five years, 16.8 per cent; and ten years, 6.3 per cent (Table 2). The survival rates for patients at various intervals are shown in Table 3.

In the University of Kansas series, women have a higher survival rate than men. At five years, women have a 20 per cent survival rate compared to 15 per cent for men ($p < 0.01$). The entire survival experience for women is better than for men as shown in Table 4. This difference has not been described by other authors. Talley *et al.* found no difference in a series of 72 cases.¹⁰ Actually, in analyzing the difference in survival in sexes in Stage I and II patients in this series women have a mean survival of 4.4 years and men 3.2 years. Median survival, however, is 2.0 years for both. The five- and ten-year survival rates for the four stages are presented in Table 5.

One hundred and four patients in this series had a primary resection for their malignancy. There were 39 Stage I, 43 Stage II, 6 Stage III, and 5 Stage IV. Eleven were not staged. Five-year survival is 31 per cent for those surgically treated versus 16.8 per cent for all patients. The five Stage IV cases and the fact that not all patients have been followed for five years may explain the lower figures in this group. In this series 134 patients did not have a primary resec-

TABLE 4
SURVIVAL RATES BY SEX

Year Past Diagnosis	Male		Female	
	NUMBER SURVIVING	PER CENT SURVIVAL	NUMBER SURVIVING	PER CENT SURVIVAL
0	168	100.0	70	100.0
1	71	41.0	39	55.5
2	46	27.0	30	43.0
3	38	23.9	23	33.0
4	33	19.5	18	25.8
5	25	15.0	14	20.0
6	24	14.3	13	18.6
7	17	10.0	12	17.1
8	13	7.5	10	14.3
9	9	5.4	9	12.8
10	5	3.0	9	12.8
11	2	1.2	9	12.8
12	2	1.2	8	11.5
13	2	1.2	8	11.5
14	1	0.6	8	11.5
15	1	0.6	6	8.6
16			4	5.7
17			3	4.3
18			2	2.9
19			2	2.9
20			1	1.5

TABLE 5
SURVIVAL BY STAGING

Year Past Diagnosis	Stage I SURVIVING		Stage II SURVIVING		Stage III SURVIVING		Stage IV SURVIVING	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
0	45	100.0	68	100.0	13	100.0	89	100.0
1	27	60.0	45	66.0	3	23.0	19	21.4
2	20	44.5	34	50.0	1	7.7	10	11.2
3	18	40.0	29	42.6	1	7.7	3	3.4
4	18	40.0	23	33.8	1	7.7	3	3.4
5	17	37.8	15	22.0	1	7.7	1	1.1
6	16	35.6	14	20.6	1	7.7	1	1.1
7	15	33.4	9	13.2				
8	13	28.8	6	8.8				
9	10	22.1	4	5.9				
10	8	17.8	3	4.4				
11	8	17.8	2	2.9				
12	7	15.5	2	2.9				
13	7	15.5	2	2.9				
14	7	15.5	1	1.5				
15	6	13.3	1	1.5				
16	4	8.9						
17	3	6.7						
18	2	4.5						
19	2	4.5						
20	1	2.3						

tion. These cases have a 5.2 per cent five-year survival rate, considerably lower than the resected patients (*Table 6*).

Of those patients with either Stage I or II, 34.1 per cent who had a primary resection lived for five years, while only 15.2 per cent of those who had no resection lived this long (*Table 7*). It would appear that resection almost doubles the chances for survival in the Stage I and II patients. However, the difficulty in attributing all the improvement to surgery is that many of those who were not resected had concomitant conditions which prevented operative procedures and also contributed directly to the mortality.

A comparison between all patients treated by primary resection only and those treated by primary resection and irradiation shows a tendency for the cases treated with surgery and radiotherapy to have a slightly higher survival rate for the first five years. Similar results have been shown by Flocks and Kadetsky.⁷ However, the numbers are too few to make firm conclusions (*Table 8*).

The survival of patients in the various decade age groups show that younger patients have a better chance for a long survival (*Table 9*). The pattern is similar to that of Fetter and Snyder; however, they

only included patients who had undergone nephrectomy.¹¹ The lower survival rates in the older age groups probably represent the increasing incidence of other diseases which affects the survival rate directly, but also indirectly by reducing the number of operable candidates.

Discussion

The patterns shown by this series are in general agreement with others which have been reported. Renal cell carcinoma is a disease which occurs in older age groups and affects men twice as often as women. Women have a higher survival in this series.

The question of when this disease may be declared cured in an individual patient is probably impossible to answer. Prolonged survival in spite of disease or recurrence after a long disease-free interval are common. Indeed 21 of the 243 patients died of their disease more than five years from diagnosis and five of these more than ten years after diagnosis.

There is no relationship between age at diagnosis and the stage of the disease, although younger patients tend to have longer survival. Patients with localized disease which can be resected have the best chance for long survival. With a five-year survival

TABLE 6
SURVIVAL RATES FOR CASES WITH
PRIMARY RESECTION AND CASES
WITHOUT RESECTION

Year Past Diagnosis	Cases With Resection		Cases Without Resection	
	NUMBER SURVIVING	PERCENT SURVIVAL	NUMBER SURVIVING	PER CENT SURVIVAL
0	104	100.0	134	100.0
1	74	71.0	36	26.8
2	54	52.0	22	16.4
3	46	44.2	15	11.2
4	38	36.5	13	9.7
5	32	30.8	7	5.2
6	30	28.8	7	5.2
7	26	25.0	3	2.2
8	22	21.1	1	0.8
9	17	16.4	1	0.8
10	14	13.5		
11	11	10.5		
12	10	9.6		
13	10	9.6		
14	9	8.7		
15	7	6.7		
16	4	3.8		
17	3	2.9		
18	2	1.9		
19	2	1.9		
20	1	1.0		

rate of less than 50 per cent in the most optimum conditions, it is necessary that the physician have a high index of suspicion for this tumor so that more early diagnoses may be made.

Control of this tumor with cytotoxic agents has proven of little value.¹⁴ Hormonal treatment, particularly with progesterone, has recently been appreciated as efficacious therapy for control of metastatic renal cell carcinoma. In a series of 38 cases of metastatic renal carcinoma, 21 per cent of the patients had objective remissions.¹⁵ The distinct differences in incidence and survival between men and women shown in this series and the objective responses to hormone manipulation shown by others places renal cell carcinoma in the realm of so-called endocrine influenced tumors.

References

1. Bennington, J. L. and Laubscher, F. A.: Epidemiologic studies on carcinoma of the kidney. *Cancer* 21:1069-1071, 1968.

2. McDonald, J. R. and Priestley, J. T.: Malignant tumors of the kidney, surgical and prognostic significance of thrombosis of the renal vein. *Surg. Gynec. Obstet.* 77:295-306, 1943.

3. Kay, S.: Renal carcinoma, a 10-year study. *Amer. J. of Clin. Path.* 50:428-432, 1968.

4. Foot, N. C.; Humphreys, G. A. and Whitmore, W. F.: Renal tumors: pathology and prognosis in 295 cases. *J. Urol.* 66:190-197, 1951.

5. Böttiger, L. E. and Ivermark, B. I.: The structure of renal cell carcinoma correlated to its clinical behavior. *J. Urol.* 81:512-514, 1959.

6. Myers, G. H.; Fehrenbaker, L. C. and Kelalis, D. P.: Prognostic significance of renal vein invasion by hypernephroma. *J. Urol.* 100:420-423, 1968.

7. Flocks, R. H. and Kadesky, M. C.: Malignant neoplasms of the kidney: an analysis of 353 patients followed for five years or more. *J. Urol.* 79:196-201, 1958.

8. Grabstald, H.: Renal cell cancer. *N. Y. State J. Med.* 64:2539-2545, 1964.

9. Hajdu, S. I. and Thomas, A. G.: Renal cell carcinoma at autopsy. *J. Urol.* 97:978-982, 1967.

10. Talley, R. W., et al.: Treatment of metastatic hypernephroma. *JAMA* 207:322-328, 1969.

11. Fetter, T. R. and Snyder, A. I.: Survival study in renal cell carcinoma. *Surg. Gynec. Obstet.* 117:7-9, 1963.

12. Riches, E. W.; Griffiths, I. H. and Thackray, A. C.:

TABLE 7
SURVIVAL RATES FOR STAGES I AND II
WITH RESECTION AND STAGES I AND II
WITHOUT RESECTION

Year Past Diagnosis	Cases With Resection		Cases Without Resection	
	NUMBER SURVIVING	PERCENT SURVIVAL	NUMBER SURVIVING	PER CENT SURVIVAL
0	85	100.0	33	100.0
1	65	76.5	11	33.0
2	49	57.6	9	27.2
3	43	48.3	8	24.2
4	35	41.2	8	24.2
5	29	34.1	5	15.2
6	27	31.8	5	15.2
7	24	28.2	2	6.0
8	21	24.7		
9	16	18.8		
10	14	16.5		
11	11	12.9		
12	10	11.9		
13	10	11.9		
14	9	10.6		
15	7	8.2		
16	4	4.7		
17	3	3.5		
18	2	2.4		
19	2	2.4		
20	1	1.2		

TABLE 8
SURVIVAL RATES FOR CASES WITH
PRIMARY RESECTION ONLY VERSUS
PRIMARY RESECTION AND RADIOTHERAPY

Year Past Diagnosis	Without Radiotherapy		With Radiotherapy	
	NUMBER SURVIVING	PERCENT SURVIVAL	NUMBER SURVIVING	PER CENT SURVIVAL
0	59	100.0	22	100.0
1	42	71.0	16	72.8
2	27	45.7	13	59.0
3	22	37.3	13	59.0
4	18	30.5	9	41.0
5	16	27.1	6	27.2
6	15	25.4	6	27.2
7	14	23.5	5	22.7
8	13	20.2	4	18.2
9	11	18.6	3	13.6
10	10	16.9	2	7.1
11	9	15.3		
12	8	13.5		
13	8	13.5		
14	7	11.8		
15	5	8.5		
16	4	6.8		
17	3	5.1		
18	2	3.4		
19	1	1.7		
20	1	1.7		

New growths of the kidney and ureter. *Brit. J. of Urol.* 23:297-356, 1951.
13. Robson, C. J.: Radical nephrectomy for renal cell carcinoma. *J. Urol.* 89:37-42, 1963.
14. Woodruff, M. W., *et al.*: Current status of chemotherapy for advanced renal carcinoma. *J. Urol.* 97:611-618, 1967.
15. Bloom, H. J. G., *et al.*: Hormone-dependent tumors of the kidney. *Cancer* 20:2118, 1967.

TABLE 9
SURVIVAL BY AGE GROUPS

Year Past Diagnosis	40-50		50-60		60-70		70-80	
	NUMBER SURVIVING	PER CENT	NUMBER SURVIVING	PER CENT	NUMBER SURVIVING	PER CENT	NUMBER SURVIVING	PER CENT
0	36	100.0	68	100.0	68	100.0	41	100.0
1	21	58.4	32	47.0	30	44.0	18	18.0
2	13	36.0	21	30.8	24	35.2	10	24.4
3	13	36.0	16	23.5	20	29.4	7	17.0
4	13	36.0	13	19.2	14	20.6	6	14.6
5	10	27.8	10	14.6	9	13.2	5	12.2
6	8	22.2	10	14.6	9	13.2	5	12.2
7	7	19.4	6	8.8	7	10.3	5	12.2
8	6	16.9	4	5.8	7	10.3	4	9.8
9	5	13.4	2	2.9	6	8.8	3	7.3
10	3	8.4			6	8.8	3	7.3
11	3	8.4			6	8.8	1	2.4
12	3	8.4			5	7.4		
13	2	5.5			5	7.4		
14	2	5.5			4	5.8		
15	1	2.7			2	2.9		
16					1	1.5		
17					1	1.5		
18					1	1.5		
19					1	1.5		
20					1	1.5		

The Enigmatic Patient

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SOME PATIENTS, for reasons of their own, use the chief complaint to conceal from the doctor the basic concern which has led to their seeking medical assistance. In order to understand this, one must consider the way that human beings communicate with each other and how they attempt to "size up" and evaluate each other. Many patients are reluctant to reveal their problems because they are embarrassing to them, or because they fear rejection or ridicule from the physician. For these reasons, they attempt to approach the matter gradually or obliquely.

This kind of indirect communication is well illustrated by studying a question for latent content as well as for manifest content. The question, "Where is the bathroom, Doctor?" probably is a simple information-gathering question at the manifest level. The patient needs to evacuate his bowel or bladder and is simply looking for the appropriate room in which to do so.

A different level question is illustrated by, "Doctor, I have a friend who thinks he might have picked up VD from a girl he met in a bar. Do you think this is very likely?" It is well known that the young man is probably talking about himself but is reluctant to reveal his guilty secret, and so he seeks information about himself by pretending that he is talking about a friend.

A question such as, "Doctor, do you believe in God?" must have a great deal of latent content, but it is much harder to guess what the patient really wants to know. If the answer is, "Yes," he may want to know if the doctor is Catholic, Protestant or Jewish. And if the answer is, "No," he may decide that the doctor can't help him. We find ourselves wondering, "Why did he ask?" or "What is he getting at?" We may never know if we answer with a simple "yes" or "no." The reply most likely to give us the answer to our question is, "I wonder why you ask that question?"

Chief complaints, too, can have a latent as well as a manifest content. Delp and Manning¹ state that the chief complaint "should be stated as briefly as possible and in the patient's own words. The complaint,

The Misleading Chief Complaint

however, and not the diagnosis should be stated." If the physician forgets that somatic and emotional components can co-exist, and that it is wise to verify the history from a source other than the patient, the doctor may be satisfied with a statement such as, "I have a slight rash on my chest." The complaint seems to state what is troubling the patient and an investi-

The manifest content of a chief complaint is not always the key to understanding a patient's distress. Because of its latent content the chief complaint may be misleading if accepted at face value. Examples of misleading chief complaints are presented with suggestions for recognizing the nature of such complaints and for getting at the real problem.

gation of the skin over the chest reveals a very small dry spot. However, the patient may be using his chief complaint simply as a "ticket of admission" to see a doctor. He may really be much more concerned about another matter, as the following case illustrates:

A 38-year-old male presented with a tiny skin lesion on his chest. He said it had been itching off and on for two or three years. He had apparently driven more than 50 miles from his home town to deliver this bit of information. I was thinking that surely he could come up with something better than that. I told him to put hot water on the itchy spot when it acted up. He seemed satisfied with the advice, but he clearly wanted to stay and talk. We were engaged in small talk for a few minutes. Then he led the conversation to the subject of his upcoming marriage. It was at this point that his real concern came out, "By the way, Doc . . . well, one time I read where deformed testicles cause deformed babies, and I don't want any deformed babies, so would you please look over my left testicle?" Examination disclosed a small varicocele of no consequence.**

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** Acknowledgement: The cases cited were seen by John Lester as a preceptee under the supervision of Ronald McCoy, M.D.; Dodge City, Kansas, in September 1969.

This case illustrates the reluctance of some patients to discuss openly their sexual anxieties, but if they are able to perceive the physician as an interested and understanding person, they may at some point develop enough courage to bring up the material. It is important that the physician have a high level of sophistication and understanding about the kinds of things that disturb his patients. Sometimes the physician is startled and surprised at what the patient is willing to bring as his chief complaint and to find out what the patient is really concerned about. Sometimes it appears to be almost paradoxical that the patient will talk readily about something that the physician might consider threatening material, and then talk reluctantly about something the physician might see as less emotionally charged. The following case is an example of such a chief complaint:

A 20-year-old male said he was afraid he had a venereal disease; he did have a small boil in the pubic region but there were no other positive findings. We discussed treatment of the boil. At this point I was asking myself why a college student who is short of money would pay money to have me look at a boil. He was a big man, about six foot 5 inches, who played basketball in college. We talked about college and then about basketball. He led the conversation to his current athletic endeavors—he was trying to get back in shape and he was working hard in gym class. Now he came to the point; he said he felt embarrassed in the locker room because he thought his penis was too small. I told him about some of Masters and Johnson's³ findings (in *Human Sexual Response*) that pertain to the penis. This seemed to put his mind at ease. He said he had wanted to ask a doctor about it for a long time but he hadn't been able to find the courage.

It should be remembered that psychiatric disorders are frequently accompanied by various kinds of somatic symptoms. Goodwin² has recently written about anxiety neurosis and depression. He indicates that the diagnostic criteria are fairly specific and each disorder follows a characteristic natural history: (1) Anxiety neurosis is often seen as an over-concern about a physical complaint which has no organic basis. The complaint comes as an attack that recurs at irregular intervals. (2) Depression may present as physical symptoms that cannot be explained. The presence of a depressed mood, weight loss, suicidal thoughts, crying spells, obsessions, family turmoil or previous history of depression might suggest this diagnosis.

Another common, but less frequently recognized disorder is the conversion reaction. It is probably a psychiatric myth that conversion reaction is not seen anymore and the most likely explanation for this myth is that most psychiatrists do not see a wide spectrum of patients appearing in a medical outpatient clinic. Psychiatrists working in a medical clin-

ic see conversion reactions rather frequently, as does the general practitioner. The following is an example of such a reaction:

A 16-year-old boy presented with pain in the lower abdomen and flanks; he was in some distress but there were no positive physical findings. We talked for a while. I could not rule out all the organic possibilities. However, I got brave and told him, "I don't think your belly pain is caused by a physical disease. I'm not sure what the trouble is—maybe you're having difficulty in school or with your girlfriend or. . . ." He stopped me, "That's it!" In fact, his girlfriend was in the hospital with labor pains, but his parents refused to let them get married. He was experiencing an emotional conflict that was transformed into a physical symptom (conversion symptom) in the right location to characterize his distress. This was a misleading chief complaint because it symbolized the problem on a level of expression that I could not initially understand.

Discussion

The above cases are typical of disorders seen in an outpatient clinic practice. The true nature of the problem which brought the patient to the physician was not immediately apparent in the chief complaint. Because of the way that the physician related to the patient and because he showed an interest in him, the patient felt free to reveal the real cause for his medical visit. An awareness that the chief complaint may have a latent as well as manifest content allows the physician to make the correct diagnosis. It is only after the true nature of the patient's problem is ascertained that adequate treatment can be instituted to relieve his concern about the "chief complaint."

Cues from the patient are often given to reveal the nature of his problem. These cues are given by the patient in such a way as to conform to his concept of appropriate behavior in the medical transaction. The cases cited for illustration reveal at least three kinds of cues:

1. The complaint may be of special symbolic value; e.g., distress in a male which is suggestive of labor pains.
2. The presenting complaint is insufficient to justify a visit to the doctor.
3. The patient wants to continue talking after the presenting complaint has been dealt with, and he leads the conversation in a particular direction.

References

1. Delp, M. H. and Manning, R. T.: *Major's Physical Diagnosis*, 7th ed. Philadelphia: W. B. Saunders Company, 1968, p. 16.
2. Goodwin, D. W.: Psychiatry and the mysterious medical complaint. *JAMA* 209:1884-1888, 1969.
3. Masters, W. H. and Johnson, V. E.: *Human Sexual Response*, chapter 12. Boston: Little, Brown and Company, 1968.

LDH Isoenzyme Patterns

. . . In Surgical Specimens From Brain and Brain Tumors

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ASSOCIATED WITH THE DIFFERENCE in metabolism between neoplasms and normal tissue is the difference in lactic dehydrogenase (LDH) isoenzyme patterns. LDH has been shown to consist of five isoenzymes which can be separated electrophoretically.³ Each isoenzyme is a tetramer formed from two subunits termed H (heart) and M (muscle). Tissues with high aerobic metabolic activity, such as heart and brain, have LDH consisting largely of H subunits with a small M subunit component. The proportion of M subunits in tissue increases as the capacity for obtaining energy anaerobically increases. Malignant neoplasms fall in the latter group and elevation of M subunits in these tissues has been reported.² Gerhardt *et al.*¹ have studied the isoenzyme patterns in brain tumors and found that gliomas with a greater proportion of M subunits were more malignant histologically. Sherwin *et al.*⁵ noted abnormal isoenzyme patterns in 79 per cent of the malignant astrocytomas (Kernohan grade 3 to 4) studied. Abnormal LDH isoenzyme patterns have also been found in the CSF and sera of patients with neurological disorders.⁴

In order to gain more information on the usefulness of LDH isoenzyme patterns in clinical neurosurgery, isoenzyme patterns of 31 surgical and two autopsy specimens were determined and compared with tissue histological diagnoses.

Methods

Surgical specimens were frozen in liquid nitrogen at -150°C and stored at -80°C until electrophoresis was done. Zondag⁷ has reported whole tissue can be stored below -20°C without appreciable loss of isoenzyme activity. Isoenzyme separation was done according to Wieme.⁶ Tissue samples (50-100 mg) were homogenized in 4 volumes of 0.1 M PO_4 buffer pH 7.0, centrifuged and 5 μl of supernatant applied to agar (Difco Special Agar-Noble) coated microscope slides. Electrophoresis was carried out at about 125 volts, 25 ma per slide for 20 to 30 minutes. The band positions were identified by staining

half the slide in a reagent containing p-nitro blue tetrazolium 0.3 mM, sodium lactate 0.1 M, phenazine methosulfate 0.1 mM, sodium cyanide 1.0 mM, and DPN 1.0 mM. The agar gel segment containing the unstained portion of each band was cut out and homogenized in 3 volumes of 0.1 M PO_4 buffer pH 7.0. Isoenzyme activity was based on the initial rate of DPNH formation after aliquots of the gel ho-

The LDH isoenzyme patterns of 33 tissues were determined and the ratio of H (heart) and M (muscle) subunits calculated. Metastatic tumors of the brain had significantly lower ratios than the low grade astrocytomas (grades 1 and 2). The highest H/M ratio was found in an oligodendroglioma and the lowest ratio was from tissue surrounding a brain abscess. In general, the malignant brain neoplasms had low H/M ratios.

mogenate were added to a lactate reagent consisting of 0.1 M glycine-NaOH-hydrazine buffer pH 9.5, sodium lactate 20 mM and DPN 0.3 mM.

The subunits of LDH are designated H (heart) and M (muscle) and have the following combinations in the five bands separated by electrophoresis: HHHH, HHHM, HHMM, HMMM and MMMM. These proportions and the percentage activity of each band were used to calculate total H and M subunits in the tissue. From these values an H/M ratio was determined.

Good reproducibility of the method was indicated by the H/M ratio of 3.35 ± 0.09 obtained when seven samples of cortex from control brain were studied.

Results and Discussion

The mean H/M ratio of each tissue group was higher than that reported by Gerhardt *et al.*¹ This difference is probably due to the difference in methods used to measure isoenzyme activity. The range

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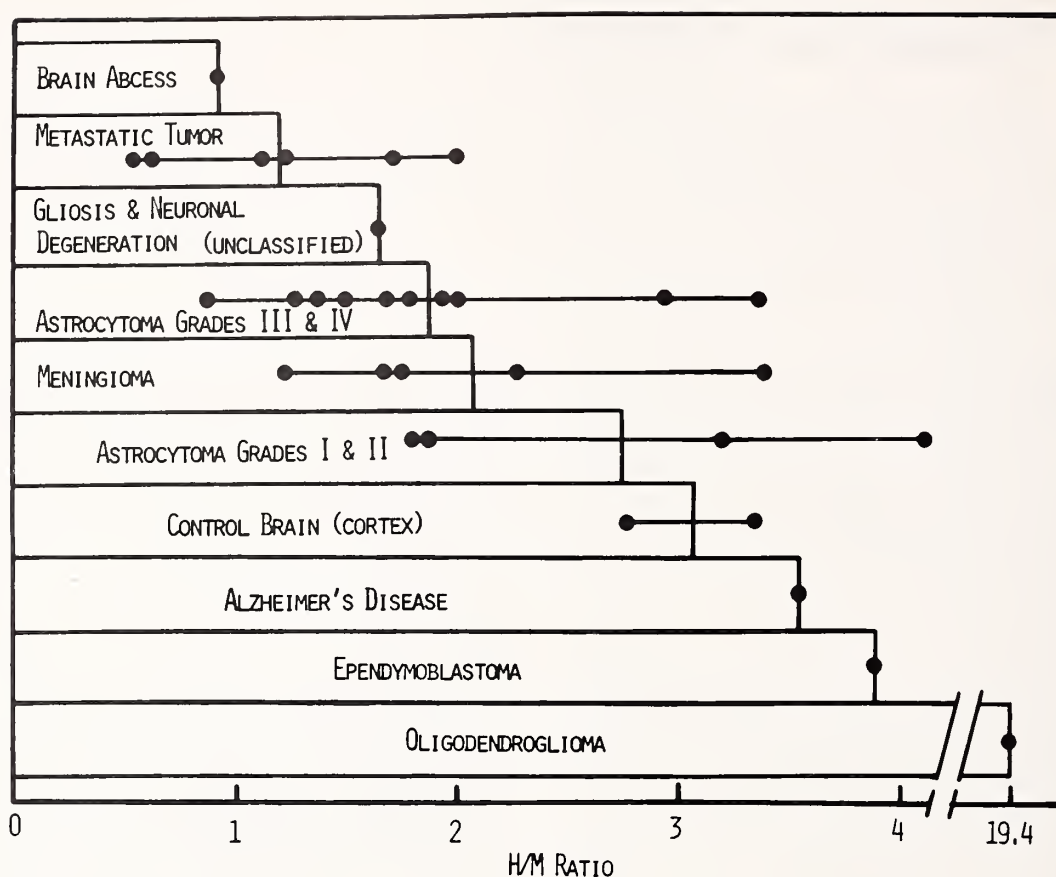


Figure 1

of H/M ratios extended from 0.92 in tissue from a brain abscess to 19.4 for an oligodendroglioma.

Twenty-six of the 33 specimens studied were brain tumors. The group with the largest number of tumors was astrocytoma, grades 3 and 4, with 10. The mean H/M ratio of this group was 1.87 which was in the lower range of ratios observed (Figure 1). The mean H/M ratio of the lower grade astrocytoma group (grades 1 and 2) was near the ratio for control brains. One glioma analyzed for isoenzyme distribution was not included in Figure 1 because of its change in histology through the years. This tumor had an H/M ratio of 10.1 and had a histological diagnosis of astrocytoma grade 3. The histological diagnosis from this tumor obtained during surgical explorations four and two years previously were astrocytoma grade 1 and 3, respectively. The isoenzyme pattern of tissue taken during the third surgical exploration was consistent with the patient's relatively long history, if high H/M ratios are assumed more characteristic of gliomas of low malignancy.

The ependymoblastoma H/M ratio was in the central range of tissue values and the oligodendroglioma studied had the highest ratio. High ratios for the latter tumor were reported by Gerhardt and associates¹

indicating an elevated H/M ratio may be characteristic of this tumor. The lowest mean H/M ratio was from six metastatic tumors. The highest tumor H/M ratio in this group was 2.00 which was still in the lower range of values measured. The mean ratio for this group was significantly lower ($P < .05$) than the mean H/M ratio of the astrocytoma grades 1 and 2.

The meningioma tumors, as a group, had a mean H/M ratio similar to both astrocytoma groups. Unfortunately, there was no characteristic pattern for this benign tumor.

There was some evidence that nonspecific changes in brain may alter isoenzyme pattern. A tissue sample with histological evidence of neuronal degeneration (Alzheimer's Disease) had a centrally located H/M ratio but both diffuse gliosis and cerebral abscess had low ratios. Leukocyte infiltration is believed responsible for the low H/M ratios in areas of tissue inflammation which could give an erroneous impression of malignancy.¹

With increased use of LDH isoenzyme patterns in the study of neoplasms a chemical classification for malignancy seems promising. This information used with histological diagnoses may give a better basis for predicting tumor behavior.

(Continued on page 122)

Atypical Viral Diseases

Recent Data Incriminates Viruses in a Variety of Slowly Progressive, Degenerative Diseases

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Introduction

VIRAL DISEASES ARE typically acute and self-limiting; normally the incubation period ranges from a few days to about two weeks and the causative virus is virtually eliminated from the host tissues after a comparatively short clinical course. However, there are a few viral diseases, e.g. rabies and serum hepatitis which have long (up to several months) incubation periods and others, such as rubella and cytomegalic inclusion disease in which the infectious agent persists for long periods (months or years) in the infected hosts. By and large, however, a progressive degenerative process observed in a number of non-viral diseases, e.g. tuberculosis, histoplasmosis and schistosomiasis, is absent in common viral diseases.

Recent studies have revealed two ostensibly different groups of atypical viral diseases. The first are the so-called slow virus infections that primarily involve the central nervous system of certain animals and man.¹ The second has been brought to light by the recent findings which incriminate a reactivated measles virus in the etiology of subacute sclerosing panencephalitis (Dawson's inclusion encephalitis). The above findings, moreover, support the intriguing concept that at least some of the human degenerative diseases that are currently of unknown etiology may represent atypical viral diseases. In this connection, a paramyxovirus has been isolated from human atheromatous lesion and from cell cultures derived from lymph node biopsy specimen obtained from a patient with Hodgkin's disease.^{2, 3}

Slow Virus Diseases

Virus diseases in which the causative agents, after long incubations, grow slowly and produce progressive pathology, often in single organs, over the course of months or years, are presently called slow virus diseases. One such disease, i.e. scrapie of sheep and goats, has been known in Europe for more than two hundred years and was considered a hereditary disease and hence preventable by selective breeding.

Others, e.g. Visna, mink encephalopathy and Kuru, the latter afflicting man, have been recently elucidated.

Scrapie. This is a slowly progressive afebrile disease of the central nervous system (CNS) of sheep and goats. It has been transmitted experimentally to healthy sheep, goats and mice with incubation periods ranging from five years (sheep) to four months (mice). The disease is seemingly under the control

The significance of the studies reviewed here can be better appreciated when it is realized that many of the human degenerative diseases, including certain types of cancer, that are currently of unknown etiology may represent atypical virus diseases.

of genetic factors.⁴ In contrast to other common viruses, the scrapie agent measuring less than 26 mu in size, is resistant to 80°C for 30 minutes and to formaldehyde. Moreover, no neutralizing antibodies are detected in the sera of infected animals.

Visna. This is a chronic, afebrile, fatal paralytic disease of sheep, first observed in Iceland in 1935 and subsequently eradicated within 16 years. Experimentally, the incubation period ranges from two to three years or longer and the affected sheep die within several months. The virus is present in various tissues of the infected animals long before the appearance of symptoms and persists in these tissues while neutralizing antibodies are developing and attaining high titers. It is readily isolated in cell cultures and unlike the scrapie agent, has the usual biochemical properties of other common viruses.

Mink Encephalopathy and Aleutian Disease of Mink. These are two slow virus infections of ranch-bred mink. The first is a fatal slowly progressing locomotor incoordination ending in death within two months. Only the central nervous system is involved. The disease resembles scrapie and the two causative

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agents share a number of biophysical properties. Aleutian disease, on the other hand, is characterized by systemic proliferation of plasma cells and lymphocytes, marked hypergammaglobulinemia and progressive degenerative glomerulonephritis and arteritis. The pathogenesis of the glomerulonephritis is believed to be related to deposition of viral antigen-antibody-complement complexes in the glomeruli. The causative virus is less resistant to heat and formalin than the agents of scrapie and mink encephalopathy but more so as compared to other common viruses. Moreover, as in visna, the virus replicates rapidly and can be readily recovered from serum, urine and various tissues of the infected mink.^{5, 6}

Kuru. This is the classical slow virus infection of man first observed by Gajdusek and Zigas in 1957 among the primitive cannibal Fore tribes of New Guinea. It is a subacute lethal cerebellar degeneration mainly in women and children who have traditionally engaged in cannibalism of dead individuals. The incubation period ranges from 4 to 20 years. Clinically an afebrile course manifesting ataxia, disturbed balance, clumsy gait and tremor ending in death in about a year are observed. Pathologically, the degenerative process is restricted to the central nervous system but no gross brain lesion is observed. Mononuclear cell infiltration, perivascular cuffing and focal neuronal necrosis are either absent or insignificant. However, marked proliferation and hypertrophy of astrocytes, mild status spongiosus of the gray matter and diffuse neuronal degeneration are generally observed. The victims show absence of pleocytosis or elevated protein in the CSF and have normal peripheral blood smear and sedimentation rate.¹

The above clinical and pathologic features bear a striking resemblance to those of scrapie. Hence, an infectious agent most likely transmitted through the consumption of undercooked brains of kuru victims was postulated. The role of cannibalism became apparent as new cases occurring among children decreased progressively after cannibalism was ended in the 1950's. Presently no case in children under 16 years of age is observed. Genetic factors, once considered important, have proved of little or no importance in host susceptibility.⁷

Since 1957, many attempts to isolate the Kuru agent in various small laboratory animals, the developing chick embryo and cell cultures have given negative results. In August of 1963, eight young chimpanzees were inoculated intracerebrally with brain materials from eight kuru victims. After 18 to 30 months, seven of the chimpanzees manifested a kuru-like syndrome. Pathologic findings were restricted to central nervous system and were basically similar to those found in human cases. Brain suspension from one of these chimpanzees was inoculated into three

young chimpanzees; all three developed the disease within 10 to 12 months.¹ Moreover, the same syndrome has also been produced in spider monkeys, 23 to 26 months after intracerebral inoculation with brain from an infected chimpanzee.⁸

Creutzfeldt-Jakob (C-J) Disease. Following the successful transmission of kuru to the chimpanzee, attempts to transmit a pathologically similar disease, i.e., C-J disease to the same species of primates were made. The disease is one of the subacute spongiform encephalopathies with symptoms of dementia, myoclonic jerks and often ataxia. At this writing, brain tissues obtained by biopsy or at autopsy from six patients with this disease, have produced fatal spongiform encephalopathy in chimpanzees inoculated intracerebrally. The incubation period ranged from 12 to 14 months. Furthermore, chimpanzee to chimpanzee transmission has also been accomplished with similar incubation period. So far, only the transmissibility of the causative agents of kuru and C-J disease has been established. Physicochemical characterization of the causative agents has not yet been done.⁹

Reactivated-Virus Diseases

These diseases are believed to be caused by the reactivation of latent infections. A latent infection is defined as a primary symptomatic or asymptomatic infection in which the infectious agent persists in the absence of clinical symptoms but with the continuous production of specific antibodies. Formerly, the concept of "autosterilizable neuroinfection" was proposed to account for the consistent failure to isolate herpes simplex virus from the brains of a certain percentage of rabbits that died of encephalitis following experimental infection with this virus. More recently, however, when rabbits that had recovered from a herpetic infection were subjected to anaphylactic shock or injected with an immunosuppressive agent, activation of the quiescent herpetic infection was observed. Furthermore, the occurrence of a latent infection with rabies virus in mice and guinea pigs has been demonstrated by immunosuppressive agents and by fluorescent antibody technique. The exacerbation of latent human infections with viruses of varicella-zoster, herpes simplex and cytomegalic inclusion disease, by a variety of immunosuppressive factors (irradiation, adrenocortical hormones, etc.) is well known in clinical medicine.

Subacute Sclerosing Panencephalitis (SSPE). This disease, also known as Dawson's inclusion encephalitis, panencephalitis of Pette and Doring, and Van Bogaert's leukoencephalitis, is a disease of children of school age. Clinically, a progressive mental and motor deterioration leading in weeks or months to a state of

changing plastic rigidity interrupted by myoclonic jerks are observed. Finally, coma with signs of decortication and often of hypothalamic dysfunction occurs. The clinical course may last for months to years and the patient dies from intercurrent infections.¹⁰

Dawson observed inclusion bodies in the neurons of SSPE patients and proposed a viral etiology for this disease.¹¹ However, many attempts to isolate a viral agent from the brains of SSPE cases gave negative results. More recently, indirect evidence incriminating measles virus in the etiology of SSPE has come from many laboratories. The involvement of measles in SSPE was deemed probable as this virus is known to be responsible for two types of CNS disease in man. Postinfection measles encephalitis occurs several days after exanthema and runs an acute course occasionally terminating in death within 24 to 48 hours. Since measles virus is not isolated from the brain, the condition is attributed to an allergic (antigen-antibody complex) response. Histopathologic features also support an allergic encephalitic syndrome. The second type of measles encephalitis occurs during the incubation period and prior to the onset of rash. Clinically it is similar to the postinfection encephalitis but measles virus can often be isolated from the brain. A direct invasion of the brain by the measles virus is evident.

The evidence leading to the incrimination of measles virus in the etiology of SSPE is manifold. SSPE patients have a history of measles infection and possess exceptionally high titers of measles antibodies in their sera and CSF. Virus particles resembling measles virus and specific measles antigen are detected in SSPE brains by electron microscopy and fluorescent antibody technique respectively. Direct evidence for a causal relationship between measles virus and SSPE was recently reported by three different groups of investigators (at Indiana University Medical Center, University of Michigan School of Medicine and National Institute of Neurological Diseases and Stroke). Brain tissues from SSPE cases were cultivated in vitro and later fused with certain human and simian cells into mixed cell cultures. The added cells then showed typical cytopathic effects of measles virus and when ruptured by freezing and thawing, free measles virus was obtained.¹²⁻¹⁴ These data published in 1969 leave no doubt that measles virus has an etiologic role in SSPE.

Presently, the perplexing question is why and how measles virus can cause an acute encephalitis in certain individuals and, in others, a progressive degenerative type of encephalitis that ensues from 4 to 17 years after the occurrence of the classical exanthematous disease. A number of hypotheses have been proposed but all are without supporting evidence. In the opinion of this writer, the evidence

supporting the concept that SSPE represents a slow virus disease of the CNS which is initiated by the reactivation of a latent virus infection that persisted after recovery from a typical measles infection, is more plausible. Supporting evidence includes observation of measles-type inclusions in the brains of children who die years after recovery from an acute measles encephalitis.¹⁵ This indicates the occurrence of a latent infection ostensibly with measles virus. Moreover, at least one case of classical SSPE has been observed several years after the occurrence of acute measles encephalitis.¹⁶

Multiple Sclerosis (MS). This is a demyelinating encephalomyelitis that in its acute form, both clinically and histopathologically resembles measles encephalomyelitis. It often occurs as sequelae of measles infections or following immunization with measles vaccine. Moreover, MS patients show higher levels of measles antibody than normal individuals. However, so far no direct evidence for the involvement of measles virus in the etiology of MS has been reported. One plausible hypothesis is that while SSPE represents a direct attack of the brain cells by measles virus, MS is the expression of an allergic (antibody-antigen) response at the membranes of the brain cells that contain measles virus.¹⁷ Epidemiologic data suggest that MS is an acquired exogenous disease of children with a protracted latent period.¹⁸

Progressive Multifocal Leukoencephalopathy (PML). This is a newly recognized subacute degenerative neuropathologic disease of man occurring as a late clinical complication mainly in patients with chronic lymphocytic leukemia or Hodgkin's disease. Some 90 cases are now known. The dominant neurologic symptoms are cerebral; motor disturbances and mental changes are most frequently observed. The onset is insidious and the patient dies within three to six months. A slow virus etiology is suggested by electron microscopic study of diseased tissues. Papovavirus-like* viruses have been consistently observed in such tissues. The possibility that this syndrome is initiated by the reactivation of a latent virus infection is plausible. At this writing the infectivity and the natural history of the observed virus are unknown.¹⁹

Summary and Conclusion

The concept that viral diseases are typically acute and self-limiting is no longer tenable. Recent data have incriminated viruses in the etiology of a variety of slowly progressive, degenerative diseases of animals and man. Scrapie of sheep and kuru and sub-

* Papovavirus group includes a number of DNA viruses that possess oncogenic activity. Human wart, polyoma (of rodents) and vacuolating (SV40 of monkeys) viruses are members of this group.

acute sclerosing panencephalitis of man are examples of these atypical viral diseases. Certain of the etiologic agents, e.g. scrapie virus, have properties such as increased resistance to heat and formaldehyde, that are uncommon among other viruses.

The pathologic process in these diseases appears to start as either a slowly progressive degeneration following a long incubation period (kuru) or an activation of a latent infection that follows an overt viral disease (subacute sclerosing panencephalitis). Only a few of these diseases and their etiologic agents have been adequately studied. In the majority, however, the transmissibility and indirect evidence for the etiologic involvement of viruses have been reported.

References

1. Gajdusek, D. C.: Slow virus infections of the nervous system. *New E. J. Med.* 276:392-400, February 16, 1967.
2. Behbehani, A. M.; Melnick, J. L. and DeBaakey, M. E.: A paramyxovirus isolated from human atheromatous lesion. *Exper. Molec. Path.* 4:606-619, December, 1965.
3. Stewart, S. E.; Mitchell, E. Z.; Whang, J. J.; Dunlop, W. R.; Ben, T. and Nomura, S.: Viruses in human tumors. I. Hodgkin's disease. *J. Nat'l Cancer Inst.* 43:1-14, July, 1969.
4. Dickinson, A. G.: Some factors controlling the incidence of scrapie in Chevoit sheep injected with a Chevoit-passaged scrapie agent. *J. Comp. Path.* 78:313-321, 1968.
5. Eklund, C. M.; Hadlow, W. J.; Kennedy, R. C.; Boyle, C. C. and Jackson, T. A.: Aleutian disease of mink: properties of the etiologic agent and the host responses. *J. Infect. Dis.* 118:510-526, December, 1968.
6. Porter, D. D.; Larsen, A. E. and Porter, H. G.: The pathogenesis of Aleutian disease of mink, I. In vivo viral replication and the host antibody response to viral antigen. *J. Exper. Med.* 130:575-593, September 1, 1969.
7. Mathews, J. D. and Glass, R.: Kuru and cannibalism. *The Lancet* II:449-452, August 24, 1968.
8. Gajdusek, D. C.; Gibbs, C. J.; Asher, D. M. and David, E.: Transmission of experimental kuru to the spider monkey (*Ateles geoffreyi*). *Science* 162:693-694, November 8, 1968.
9. Gibbs, C. J. and Gajdusek, D. C.: Infection as the etiology of spongiform encephalopathy (Creutzfeldt-Jakob disease). *Science* 165:1023-1025, September 6, 1969.
10. Zeman, W. and Kolar, O.: Reflections on the etiology and pathogenesis of subacute sclerosing panencephalitis. *Neurology* 18, Part 2:1-7, January, 1968.
11. Dawson, J. R.: Cellular inclusions in cerebral lesions of epidemic encephalitis. *Arch. of Neur. and Psych.* 31: 685-700, April, 1934.
12. Chen, T. T.; Watanabe, I.; Zeman, W. and Mealey, J.: Subacute sclerosing panencephalitis: Propagation of measles virus from brain biopsy in tissue culture. *Science* 163:1193-1194, March 14, 1969.
13. Payne, F. E.; Baublis, J. V. and Ttabashi, H. H.: Isolation of measles virus from cell cultures of brain from a patient with subacute sclerosing panencephalitis. *New E. J. Med.* 281:285-289, September 11, 1969.
14. Harta-Barbosa, L.; Fuccillo, D. A.; London, W. T.; Jabbour, J. T.; Zeman, W. and Sever, J. L.: Isolation of measles virus from brain cell cultures of two patients with subacute sclerosing panencephalitis. *Proc. Soc. Exper. Biol. and Med.* 132:272-277, October, 1969.
15. Adams, J. M. and Baird, C.: Inclusion bodies in measles encephalitis. *JAMA* 195:290-298, January 24, 1966.
16. Legg, N.: Virus antibodies in subacute sclerosing panencephalitis: A study of 22 patients. *Brit. Medical J.* 3:350-352, August 5, 1967.
17. Pette, E.: Measles virus: A causative agent in multiple sclerosis? *Neurology* 18, Part 2:168-169, January, 1968.
18. Kurtzke, J. F.: Multiple sclerosis and infection from an epidemiologic aspect. *Neurology* 18, Part 2:170-175, January, 1968.
19. Zu Rhein, G. M.: Association of Papova-virion with a human demyelinating disease: Progressive multifocal leukoencephalopathy. *Progress in Med. Virology* 11:185-247, Karger, Basel/New York, 1969.

LDH Isoenzyme Patterns

(Continued from page 118)

References

1. Gerhardt, W.; Clausen, J.; Christensen, E. and Riishede, J.: Lactate dehydrogenase isoenzymes in the diagnosis of human benign and malignant brain tumors. *J. Nat. Cancer Inst.* 38:343-357, 1967.
2. Goldman, R. D.; Kaplan, N. O. and Hall, T. C.: Lactic dehydrogenase in human neoplastic tissues. *Cancer Res.* 24:389-399, 1964.
3. Markert, C. and Appella, E.: Physicochemical nature of isozymes. *Ann. N. Y. Acad. Sci.* 94:678, 1961.
4. Saifer, A.; Schneck, L.; Perle, G. and Volk, B. W.: Lactate dehydrogenase isoenzyme distribution in the cerebral sphingolipidoses and other neurological disorders. *Neurology* 19:147, 1969.
5. Sherwin, A. L.; LeBlanc, F. E. and McCann, W. P.: Altered LDH isozymes in brain tumors. *Arch. Neurol.* 18:311-315, 1968.
6. Wieme, R. J.: An improved technique of agar-gel electrophoresis on microscope slides. *Clin. Chem. Acta* 4: 317, 1959.
7. Zondag, H. A.: Lactate dehydrogenase isozymes: Lability at low temperature. *Science* 142:965, 1963.

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Hoxie's Bad Dream: Early Medical Education in Kansas

ROBERT P. HUDSON, M.D., *Kansas City**

PERHAPS THE WORD most often used to describe medical education in 19th century America is *chaotic*. Many factors combined to produce the situation. At once overriding and underpinning them all was an attitude best described by the French expression, *laissez-faire*, or noninterference. The term was popularized by economists to characterize free enterprise, a dominant economic force of the last century. But the notion that a free market would correct itself ideally was not limited to goods and labor. It spread to many social institutions of the time, including medical practice and medical education.

The 18th century beginnings of medical education in this country were promising. The first medical school was founded by the University of Pennsylvania in 1765. It was soundly patterned along Edinburgh lines, which is to say, it set high admission standards, had a genuine university affiliation, and a working arrangement with a large public hospital. This laudable paradigm was copied by the other three schools opening in the 18th century, King's College (1767), Harvard (1783) and Dartmouth (1798).

But with the founding in Baltimore in 1807 of the "so-called medical department of the so-called University of Maryland,"¹ the bad seed was sown. Because, in reality, the Maryland school was not a branch of the University at all. Rather, it was an educational venture incorporated like any business to earn the shareholders a profit, and in this case, the stockholders were the physicians who made up the faculty. The American proprietary medical school had been born.

In medical parlance, the growth of proprietary schools was wildly malignant. Twenty-six new schools appeared between 1810 and 1840. From 1840 to 1876 there were 47 more. In little more than a century the United States produced over 400 medical schools.² During the century the population grew from about five to 75 million.³ For contrast there are now some 100 medical schools and a population exceeding 200 million persons.

To be sure, some of the early schools were short-lived. A few were even stillborn, but like dandelions, two popped up for each one that went under. At the height of this academic insanity medical schools erupted in such unlikely spots as Independence, Kansas, and Joplin, Missouri.

At the beginning of the 20th century German commentators were astonished because their country's physicians had increased to one for each 2,000 persons. At that time the American ratio was one for each 400 inhabitants overall, one per 200 persons in the larger cities, and many villages of fewer than 200 souls had two or even three physicians.⁴ Perhaps this is what today's patient, recalling his last wait in a physician's office, has in mind when he talks of the good old days. He would be less nostalgic, however, if he looked closely at the quality of the schools that produced this luxurious proportion of physicians to patients.

A striking feature of the story is that until late in the 19th century none of the parties concerned wanted legislative control of medical matters. Lawmakers, trapped between (and understandably confused by) the conflicting claims of regular and irregular physicians—the latter in Kansas primarily homeopaths

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and eclectics—suspected the motives of regular physicians and shunned the issue altogether. Regular physicians fought proposed laws on grounds that the very regulation of irregulars implied public recognition and conferred a protective dignity on quacks. The public, for its part, wanted no interference with the right of every citizen to choose his medical attendant.⁵ Nor was the intelligentsia disposed to deter the public in this opinion. Herbert Spencer is quoted as saying, "Unpitying as it looks, it is best to let the foolish man suffer the appointed penalty of his foolishness. For the pain—he must bear it as well as he can; for the experience—he must treasure it up, and act more rationally in the future."⁶

As the number of schools increased, competition for students grew ever more fierce. So too did the ingenuity and imagination of the physician-proprietors. In an unbridled market, the schools resorted first to advertising, then to misleading advertising. The outcome was predictable, and not long arriving. Standards dropped inexorably, both for admission and graduation. For example, one admission requirement frequently read, "a high school diploma or its equivalent." Abraham Flexner hit the mark here when he wryly defined an equivalent as "a device that concedes the necessity of a standard which it forthwith proceeds to evade."⁷ In 1832 Daniel Drake expressed an opinion that was widely held both within and without the profession, saying, "The current opinion that men of slender abilities are competent to the practice of physic, is obviously a great cause why so many feeble-minded boys are dedicated to its study."⁸

Nor did the sad state of American medical training escape foreign notice. Puschmann in his 1891 *History of Medical Education* concluded that "It is therefore not a matter for surprise that American degrees in medicine should be regarded with distrust in Europe, and placed in the same category as those amiable but meaningless distinctions which are conferred on people dancing the cotillion."⁹

Early medical education in Kansas presents a microcosmic picture of America's attempt to hew a quality professional education out of rough frontier timber. In varying degrees Kansas had it all. There were a few farsighted and dedicated men among many petty self-servers. There was political intrigue at every level from the state government to the local medical society, an activity from which the academic community itself was not immune. When it came time to select a site for a state medical school, there was deep-rooted pride (which can be a euphemism for chauvinism) among citizens of the contending cities.

Other forces contributed to what Griffin termed Kansas' pedagogic "years of frustration."¹⁰ Still

flowering were the bitter fruits of Kansas-Missouri enmity sown in the Civil War. There was the power struggle between rural and city legislators, the many erosive evils of an entrenched proprietary philosophy in medical education, the unavoidable economic pressures as medicine moved from relatively inexpensive theoretical teaching to the costly classrooms of hospital and laboratory. And there was the final urgent pressure engendered by the public exposé of American medical education generally in the famous *Bulletin Number Four of the Carnegie Foundation for the Advancement of Teaching* authored by the implacable little schoolmaster from Louisville, Abraham Flexner.

In large part it was competition itself that finally halted the proprietary movement. Many schools simply could no longer survive financially. Flexner was correct in moving morality from the picture when he said, "Nothing has perhaps done more to complete the discredit of commercialism than the fact that it has ceased to pay. It is but a short step from an annual deficit to the conclusion that the whole thing is wrong anyway."¹¹

In common with the other United States, the earliest form of medical education in Kansas was the preceptorship,¹² a system born of necessity in Colonial America, but one that long survived its original *raison d'être*. A contractual arrangement in its inception, the preceptorship undoubtedly prepared men reasonably well for medical practice as long as medicine lacked a scientific basis. Kansas, however, came into the picture relatively late at a time when, in Nathan Smith Davis' words, ". . . the relations of students and preceptor have become merely nominal in practice; in nine cases out of ten consisting in little more than the registry of the student's name in the doctor's office, permission to read the books of his library or not, as he chooses, and the giving of a certificate of time of study for the student to take to the medical college where he expects to graduate."¹³

The number of Kansans trained exclusively by preceptors was small compared to states to the east. At least we can infer this from Hoxie's statement that the number of locally trained men plus physicians entering Kansas—many of these Germans who migrated to Kansas after the revolution of 1848—was insufficient for the medical needs of the state, a deficiency that eventually helped drive the Legislature to the conclusion that Kansas must train its own physicians.¹⁴

Once Kansans decided they needed a state medical school, the first hurdle was the question of location. This stormy chapter generally replayed the earlier battle over locating the main university, a story Griffin has written with suspense rare in historical writ-

ing, and a drama he found peopled with men "... adept at concealing their real purpose."¹⁵

The final two-stage decision—to put the basic sciences in Lawrence and clinical teaching in Kansas City—created warring factions that threatened the existence of the infant school and continued to plague academic administrators right down into recent years. But how could it have been otherwise? With one piece of candy and a half dozen hungry kids, there were bound to be tears of outrage. In truth, at the time the decision had to be made there was no single best location. Those who considered medicine a trade argued for attaching the school to the agricultural college in Manhattan. Those who saw medicine as a profession insisted on wedding the school to the university in Lawrence.¹⁶ Citizens of Wichita and Topeka saw their cities as superior because they were larger.¹⁷ When the influential Dr. C. A. Logan's Leavenworth bid was rejected, he opposed a Lawrence location because, among other reasons, it meant planting "... a fourth rate medical school in a little fourth rate, Yankee town."¹⁸

As early as 1859 a medical school faculty had been appointed by the Lawrence Trustees,¹⁹ but it was not until 1889 that a one-year preparatory course got under way. Students completing this year were then accepted in the second year at Ohio Medical College of Cincinnati or in Chicago's Rush Medical School. The Lawrence course was lengthened to two years in 1899, but still no provision was made for clinical teaching or awarding a medical degree.²⁰ In view of the proliferation on all sides of inferior medical schools, some no more than diploma factories, this restraint appears admirable indeed.

Still, the Lawrence program was not unaffected by the wild growth of proprietary schools. As students came to be wooed like today's football prospect, there was a steady decrease in enrollment in the more demanding course in Lawrence. One observer put the matter harshly, but frankly: to the prospective student of the day, the only question was "Where can I get the degree of doctor, which is equivalent to a license to practice and a full admission into the ranks of the medical profession in the shortest time and consequently with the least expenditure of time and money?"²¹

At the same time Kansas students found it increasingly difficult to transfer to other schools. Chancellor Snow, spurred by the promise of land in Rosedale (now a part of Kansas City, Kansas) decided to build clinical facilities at that site. Again rose the litany of protest. Rosedale was eccentrically located. It would be dominated by men doubly blighted, men who were both specialists and residents of Kansas City, Missouri. Beneath all this, of course, but to a degree that cannot be quantified, hovered profes-

sional jealousy and economics. Appointment to a medical faculty in those days enhanced a physician's social prestige and often increased his consultative practice, much as an academic medical position nowadays is a more likely stepping-stone to the cover of *Time* magazine.

It was 1905 before clinical instruction began in Kansas City. Chancellor Frank Strong chose Lawrence physician George Hoxie as the first dean. What Dr. Hoxie found in Kansas City was not a Berlin wall, but a maze of Berlin walls. After considerable dickering, three of the existing medical colleges agreed to merge to provide clinical facilities for the shaky venture. Two were in Kansas, the College of Physicians and Surgeons and the Medico-Chirurgical College, and the other, the Kansas City Medical College, lay across the river in Missouri.²² Of the three, only the latter had any real strength. The two Kansas colleges were typical proprietary medical schools of the time.²³

With the merger, Hoxie found himself facing a situation that present students and teachers would see as Utopian, but one Hoxie knew to have all the delights of the sub-basement of Dante's Purgatory. To edify his 96 students, Hoxie had a merged total of 100 faculty members.²⁴ Hoping things might solve themselves through some variant of the law that has the fittest surviving, Chancellor Strong hit on the idea of having all courses elective—those professors the students neglected would gradually fade away. And so they did, but not without rancor. Profound disappointment was bound to ensue, and disappointment transmutes easily to enmity. Hoxie predicted that within three years the plan would make him the most hated physician in Kansas City. In his memoirs he concluded sadly, "And so it turned out."²⁵

Hoxie was further hampered because his clinical facilities were scattered about Greater Kansas City at a time when public transportation was fully as slow and uncertain as it is today. For several years the main clinical teaching took place in Kansas City, Missouri, and in truth, one wonders if the school would have survived without the support of Missouri physicians. But opposition among politicians and Kansas physicians gradually grew unbearable. To solve the problem, an arrangement was concluded with Bethany Hospital of Kansas City, Kansas, to partially consolidate clinical teaching there. At this point, the smoldering resentment among private physicians surfaced. When the first two patients arrived for admission to a teaching service at Bethany, they were refused by the nurse in charge. What currently we call a confrontation ensued, and the ruling was allowed to stand. It was one of those petty events on

which large historical decisions often pivot, because the Regents, now backed to the wall, returned to Dr. Simeon Bell's longstanding offer of land and money if the University would locate its teaching hospital in Rosedale.²⁶

About this time Abraham Flexner inspected the medical schools of Kansas. His report served to shock Kansans out of their apathy, and to open, however narrowly, the latch on the taxpayers' purse. Flexner had this to say of the Kansas Medical College of Topeka (the medical department of Washburn College), "The dissecting room is indescribably filthy; it contained, in addition to necessary tables, a single badly hacked cadaver, and was simultaneously used as a chicken yard. This was explained as follows: The room had not been in use for eight months or so and would not be in use until cold weather. [It was then the middle of November.] The cadaver happened to be there because of the private studies of one of the professors, who put it there for his own convenience. In the same way, because the room was not in public use and would not be for some time, another member of the faculty stored there, for use in embryology, the coop of live chickens."²⁷

The University school fared a bit better, but not much. Here Flexner's criticism centered around the divided campus and the unwillingness of the Legislature to provide funds to hire a full-time faculty.²⁸ The Topeka school closed its doors in 1913, and where at one time or another there had been nearly a score of medical colleges in Greater Kansas City, the Rosedale school now stood alone.²⁹

In 1908, in one of those consistent inconsistencies that mark Kansas political history, a Democratic legislature was elected. With this Dr. Hoxie faced the crisis that finally brought him down. His budget for clinical facilities was slashed to \$35,000, less than enough to support one department. In his moment of trial, Hoxie found he had few reliable friends. He obtained no sympathy from politicians in the "short grass country," who had wanted the school in Manhattan in the first place. Nor was there help from the still resentful citizens of Wichita and Topeka. Physicians throughout the state decried the fact that three fourths of the medical school faculty lived in Missouri. One Wyandotte County physician echoed a pervasive complaint when he said, "Surely it would take but a whiff and a blow to make the institution a Missouri one altogether. . . ."

Nor did the more local citizenry rally to Hoxie's cause. The people of Wyandotte, even though they had failed to meet their pledge of a \$100,000 bonus to retain the school in their area, resented the move to Rosedale. Many Kansas physicians were "sore," to use Hoxie's word, because they had not made the faculty and did not want the school to succeed without them.

Even the citizens of Rosedale, the one group with every apparent reason to back Hoxie and the school, were increasingly hostile. They had expected the state to pay for new sidewalks and other improvements, and their merchants had anticipated swollen coffers from supplies the school would need. Instead, the public improvements were not forthcoming and the school's budget was cut drastically.³⁰

Hoxie later recalled the years from 1909 until he resigned in 1911 as ". . . a bad dream, where one set of visions merges into another without any explanation or logical sequence."³¹

Further tribulations lay ahead, but after the end of World War I, the picture became gradually happier. The interested reader will find this story ably related in Ralph Major's *Account of the University of Kansas School of Medicine*.³²

The success story of medical education in the early years of Kansas was one of a few strong men persevering, at times almost on faith alone. The story had its shabby side, but when the whole truth is known, most of history's chapters reveal a measure of sordidity. Perhaps the most surprising feature is the ending—the school survived. Even for the grim years, there is solace in the summary of William Welch, the Johns Hopkins pathologist who was a major force in reconstructing medical education in America. Speaking of his own school, the College of Physicians and Surgeons of New York in the 1870's, Welch said, "One can decry the system of those days, the inadequate preliminary requirements, the short courses, the dominance of the didactic lecture, the meager appliances for demonstrative and practical instruction, *but the results were better than the system*. Our teachers were men of fine character, devoted to the duties of their chairs; they inspired us with enthusiasm, interest in our studies and hard work, and they imparted to us sound traditions of our professions; nor did they send us forth so utterly ignorant and unfitted for professional work as those born of the present greatly improved methods of training and opportunities for practical studies are sometimes wont to suppose."³³

Something close to this can be said as well of Hoxie's bad dream years in Kansas.

References

1. Flexner, Abraham: *Medical Education in the United States and Canada*. New York: The Carnegie Foundation, 1910, p. 5.
2. *Ibid.*, p. 6.
3. *Historical Statistics of the United States: Colonial Times to 1957*. Washington, D. C.: U. S. Bureau of the Census, 1960, p. 7.
4. Flexner, *op. cit.*, p. 14.
5. Fitz, Reginald H.: The legislative control of medical practice, *Medical Communications of the Massachusetts Medical Society*, 1894, 16:282.

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The Lure Lives On

Some Recent Significant Medical History Acquisitions

PHOEBE PECK,* *Kansas City*

DR. LOGAN CLENDENING divided visitors to his medical history library into two categories. First, there was the fellow collector. "It is only occasionally," Clendening wrote,

that you can make the fellow collector squirm. Perhaps you show him the *Cinq Livres* of Ambroise Paré, 1572, or the very tall Estienne, or the most beautiful of all Gemini, or the *thick paper*, 1628, *De Motu* . . . [by] Harvey. . . . Then, of course, if you are successful you sip the most exquisite of all human ecstasies, you see a film come over his eyes, he avoids your steady glance,—he envies you—he covets your possessions—oh! happiness!

Second, there was the non-collector. Subdivided, one group might be described as the

sort who doesn't care to see your collection at all. . . . They arouse no emotion in you at all—not even contempt. They are pleasant enough folk—let them guzzle their highball, or shuffle their silly past cards—or regale you with a long account of the staggering diagnosis of myxoedema they made when everyone else in town had muffed it.

Another group was the nonprofessional noncollector—a mere layman. "You can while away a pleasant hour with these every now and then, but it is an insipid pastime."

Still a third group was the professional noncollector—"the fellow who has never bought a book that was not red hot from the press so that it often burned his intellect." Clendening knew how to lead his visitors on; some would be certain in time to ask about his treasures. And he would tell them why he collected his books, although he admitted that there was little use in trying to defend the matter on logical grounds. Clendening stated that he collected books because it gave him happiness. It was as simple as that.

With happiness, we in the History of Medical Library have continued to collect rare books. This has been made possible through the Clendening Book Fund and other gifts and state appropriation. And we can "take down one book after another and hold them and pat them and realize that they are [ours]."

Four of our recent significant purchases will be described.

The rare volume, the *Cinq Livres* of Ambroise Paré (1510-1590), has already been mentioned. Next to it on the shelf now stands his *Dix Livres* (Figure 1). Published in Paris in 1564, this was the French army surgeon's first work of magnitude. To his

The History of Medicine Library at the University of Kansas Medical Center carries on in the Clendening tradition.

treatise on gunshot wounds, he added three books on urology and described for the first time the use of ligature in amputations, together with the definite discarding of the cautery. Our copy is in mint condition, bound in full red morocco with marbled end papers of the comb design, gilt edges and interior dentelles.

At the suggestion of Miss Alexandra Mason, who is in charge of the special collections at the Lawrence library, we recently obtained an Italian manuscript. Apparently original, or different handwriting, with cancellations, corrections and additions, this 59-page report covers the medical, philosophical and astrological aspects of the plague. It was written during or shortly after the south of France was ravaged from 1720 to 1722. No mention is made of it in the bibliographical footnotes of Gaffarel and Duranty's *La peste de 1720 à Marseille & en France d'après des documents inédits*. . . . Paris, 1911.

Professor L. R. Lind, also of the Lawrence campus, gave us this description of the manuscript. It is an anonymous essay sent to the so-called Royal Academy of Fine Arts and Sciences in Bordeaux and submitted to be read and discussed in competition. At one point, the writer compared the recent plague in Marseilles with the plague of Athens, described by Thucydides over 2,000 years previously. His conclusion was that the disease existed when the spirit of the air was filled with little bits of bodies harmful to the human constitution.

In our next purchase, we wandered quite away from the medical field. Surely Clendening would approve. His interests were very wide, and often vis-

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Figure 1. Title page and cover of Paré's book.

itors are amazed that we have, for example, a first edition of Smith's geological maps, a beautiful colored facsimile of an Egyptian mathematical papyrus, or Hoover's scholarly translation of Agricola. So, our nonmedical book is Kircher's *Principis Christiani Archetypum Politicum*. . . . Amstelodami, 1672. Here, in one of his rarest works, the Jesuit priest, who lived from 1602 to 1680, gave his ideas on the art of government based upon political-clerical doctrine; and, in the second part, he traced the life of Honoré Juan, Bishop of Osma, who served under Charles V and Philippe II.

Now if we are to give a reason for this purchase, it is because it fits beautifully in our Kircher collection, which is an exceedingly good one (see our *Athanasius Kircher . . . An exhibition of books . . .* 1958). For a better understanding of Kircher, it would be well to quote Dr. Ralph H. Major:

[This luminary of first magnitude in the learned Society of Jesus] answered his critics by writing books. When one book was assailed by critics he answered by writing a book on another subject. His literary activity was enormous. In addition to works on theology and philosophy he wrote on philology, universal language,

archaeology, history, geography, magnetism, optics, sun dials, acoustics, music, astronomy, mechanics, arithmetic, natural history, medicine and magic. . . .

We cannot but admire the tremendous enthusiasm with which Kircher attacked almost every known science and attempted to understand it himself and explain it to his readers. . . .

Kircher, with all his vagueness and haziness, had his moments of clear vision; and in one of these he propounded the germ theory of disease, not from speculation of which he was so fond, but from observation.¹

When Dr. Stanley R. Friesen was in London this past spring, he saw in a bookstore a set of *A Voyage to the Islands Madera, Barbados, Nieves, S. Christophers and Jamaica* . . . by Sir Hans Sloane (1660-1753). This he believed would be a splendid and valuable addition to our library. Indeed it is. This is Sloane's great natural history book. In two folios, the first was published in 1707, some 18 years after the voyage, during which his appointment was that of physician to the West Indian Fleet.

The work contains beautiful, large, double copper-plates, according to the title page "as big as the Life" (Figure 2) and descriptions of what he found



Figure 2. Plate from Sloane's work.

on the islands—the herbs and trees, fishes, birds, insects and reptiles, the people, their diet, illnesses and remedies, the use of chocolate and tobacco. Dr.

Friesen points out that it also shows the first transcription of American folk music (Negro spirituals). Sloane was a doctor who traveled "from a desire to visit strange and different parts of the world." His account is an important one in our books on travel (see "Doctors and Their Travels" in our *NEWS* . . . November 1966).

The University of Kansas School of Medicine can justly be proud of its History of Medicine Library. Could we hope that our visitors will ask about our treasures and covet our possessions—oh! happiness!

References

All quoted matter, unless otherwise specified, is from: Clendening, Logan: *The Lure of Old Medical Books*. Read before the Academy of Medicine of Cleveland. December 15, 1933.

1. Major, Ralph H.: Athanasius Kircher. *Ann. Med. Hist.* 3, ser. I:109, 120, 1939.

Hoxie's Bad Dream

(Continued from page 126)

6. Spencer, Herbert: *Social Statistics*, 1851, p. 373. Quoted in Fitz, *op. cit.*, p. 284.

7. Flexner, *op. cit.*, p. 30.

8. Drake, Daniel: *Practical Essays on Education and the Medical Profession in the United States*. Baltimore: The Johns Hopkins Press, 1952, p. 8.

9. Puschmann, Theodor: *A History of Medical Education*. London: Lewis, 1891, p. 534-535.

10. Griffin, C. S.: The University of Kansas and the years of frustration, 1854-1864. Reprinted from *The Kansas Historical Quarterly*, XXXVI, Spring, 1966.

11. Flexner, *op. cit.*, p. 11.

12. Bonner, Thomas N.: *The Kansas Doctor: A Century of Pioneering*. Lawrence: University of Kansas Press, 1959, p. 11-14.

13. Davis, Nathan S.: *Contributions to the History of Medical Education and Medical Institutions in the United States of America 1776-1876*. Washington: Government Printing Office, 1877, p. 21-22.

14. Hoxie, George H.: The beginnings of the School of Medicine of the University of Kansas. Ms. in Archives of Kansas University Medical Center, p. 1.

15. Griffin, *op. cit.*, p. 8.

16. Hoxie, *op. cit.*, p. 2.

17. *Ibid.*, p. 15.

18. Bonner, *op. cit.*, p. 100-101.

19. *Ibid.*, p. 100.

20. Hoxie, George H.: The School of Medicine: *Graduate Magazine of the University of Kansas*, 6:10, 1908.

21. Davis, *op. cit.*, p. 37.

22. Hoxie: *Beginnings of the School of Medicine*. p. 7.

23. *Ibid.*, p. 7.

24. *Ibid.*, p. 6.

25. *Ibid.*, p. 12.

26. *Ibid.*, p. 7.

27. Flexner, *op. cit.*, p. 227-228.

28. *Ibid.*, p. 226.

29. Bonner, *op. cit.*, p. 109.

30. Hoxie: *Beginnings of the School of Medicine*. p. 15.

31. *Ibid.*, p. 16.

32. Major, Ralph H.: *An account of the University of Kansas School of Medicine*. Kansas City, Kansas: University of Kansas Medical Alumni Association.

33. Welch, William: Development of American Medicine. *Columbia University Quarterly Supplement*, December, 1907. Quoted in Flexner, *op. cit.*, p. 9-10.

Cancer Page

The Cancer Examination

Few of us have time to read much in the way of lay magazines, but a recent issue of *Coronet* happened to come to your editor's attention. In it was an article with a very real message for all of us practicing clinical medicine. The article, "How Doctors Fail Their Women Patients," was by Janet Greene who is obviously a knowledgeable writer on the subject of cancer. She had recently lost a 34-year-old best friend with cancer of the cervix. Mrs. Greene felt her friend's death should have been preventable.

In order to follow up on her idea of physician neglect, she made appointments with three physicians, selected at random from the phone book, and asked for her annual physical checkup. She relates in detail the type of examination she received.

Her principal grievances were that none of the three completely undressed her so that adequate skin inspection could be done; breast examination was hasty and incomplete; rectal examination was omitted; routine laboratory procedures were not included; and little attention paid to history, particularly as regards smoking.

The author of this article is not a physician, and many of us might raise some question to one or two of her objections when taken in the context of her writing. But the point is, the physicians she consulted seemed to feel that a cursory breast examination, pelvic and "Pap" constituted a satisfactory checkup.

The public has been educated—and rightly so—to expect more than this.

It is past time that we as physicians accept the responsibility of providing comprehensive health screening by complete and thorough examinations. About one third of patients discovered to have cancer are now cured. It is estimated that this could be raised to one half simply by recognizing the disease in an earlier form and treating it earlier. Most of this responsibility is the physician's.

THE MEDICAL PROFESSION MUST AWAKEN AND START QUALITY CONTROL FROM WITHIN OR IT WILL BE FORCED DOWN OUR NECKS FROM WITHOUT!!!

Seminars in the practical Chemotherapy of Cancer have been arranged for Salina on June 4 and Dodge City, June 5. Enrollment will be limited and on a first come, first served basis. These meetings were quite well received last year at Hays and Topeka. Plans are already underway for four such seminars each year starting in 1971. You will receive direct mail information regarding the Salina and Dodge City meetings.

—The Committee for Control of Cancer

The President's Message

False Accusations on Medicaid

The statement below was written February 10 at the request of the *Kansas City Kansan* and was printed in part by that paper. The headlines in the statement were not in the *Kansan*.

A large three-column headline in a Kansas City paper screams "Health Cost Abuse Seen." A sub-headline said "Big Kansas Fee"; below this "One Group of Physicians Receiving \$458,888."

This obviously meant to give the impression these doctors are cheating Medicare and Medicaid.

This is completely untrue.

The above programs were passed by Congress over the vigorous objections of physicians. But when they became law, physicians in Kansas worked with the Kansas Legislature to enact good state programs. We have done our best to make the law work. Many, many hours have been taken from our practices to spend on necessary committee work.

The federal law states that physicians are to receive the same fee for welfare patients as for the private patient so that the welfare patient will feel he is receiving the same level care as the paying patient.

Case workers have told welfare recipients that they are entitled to this care and have encouraged them to avail themselves of it. When a patient presents himself at the office, the doctor is morally obligated to care for him.

Two weeks ago a number of welfare recipients from Kansas City went to Topeka to complain that physicians were turning away welfare patients.

On the one hand we are accused of seeing too many and on the other hand seeing too few. Durned if we do and durned if we don't.

Now as to the large fee in the headline, Mr. Lastelic mentioned the figure paid to a group of physicians with no further explanation. A group can mean two to five or more. In this case, the group is 60 doctors in a seven-story building with complete x-ray and laboratory facilities and 250 employees. An



outstanding, honorable group of men who could be just as busy as they would want to be without ever seeing a welfare patient.

The highest fee to a single doctor was \$37,679. This doctor is one of the most highly respected physicians in Kansas. He has worked 10 to 12 hours a day in an area of Wichita with a very high incidence of welfare patients. He is available to his people 24 hours a day, seven days a week, and they would be in serious trouble without him. The Kansas Medical Society looked into this situation and found his fees very modest and estimated that the cost, if the government were to take over his office and do the job he is doing, would be in the million dollar range.

As president of the Kansas Medical Society I represent very much these false and unsubstantiated headlines.

LELAND SPEER, M.D., *President*

KANSAS MEDICAL SOCIETY

111th Annual Meeting, May 3-6, 1970

Broadview Hotel, Wichita

SUNDAY—MAY 3

1:00 p.m. EXHIBITS OPEN—REGISTRATION

2:30 p.m. FIRST SESSION, HOUSE OF DELEGATES

MONDAY—MAY 4

8:00 a.m. REFERENCE COMMITTEES

10:30 a.m. SPORTS DAY

GOLFING—Wichita State Course
(old Crestview County Club)

SHOOTING—Planned for afternoon

BOWLING—Planned for afternoon

6:30 p.m. SPORTSMAN'S SOCIAL—Surprise Entertainment—Don't Miss It!

7:30 p.m. SPORTSMAN'S BANQUET

DORIS BUSS COMBO—Music and Dancing

CROWN PLAYERS—MeloDrama—Olio—Skits

TUESDAY—MAY 5

7:00 a.m. SPECIALTY SOCIETIES' BREAKFASTS

9:00 a.m. SCIENTIFIC PROGRAM—MEDICAL EDUCATION

GENERAL LUNCHEON

5:30 p.m. KU ALUMNI SOCIAL

7:00 p.m. PRESIDENT'S BANQUET

Program: ANN LANDERS—MEDICINE'S FRIEND

WEDNESDAY—MAY 6

9:00 a.m. SECOND SESSION, HOUSE OF DELEGATES

Mail the pre-registration form below to the Kansas Medical Society, 1300 Topeka Avenue, Topeka, Kansas 66612. Checks should be made payable to the Kansas Medical Society.

Please reserve tickets for me for the following events:

MONDAY, MAY 4, 1970

(Sports Day)

Wives and those not participating in the sports activities are invited to attend the Sportsman's Social and Banquet.

No. of
Tickets

—Sportsman . . . \$20 each (includes sports fees)

—Tickets for others attending Sportsman's Social and Banquet . . . \$10 each

TUESDAY, MAY 5, 1970

—General Luncheon . . . \$2 each

—President's Banquet . . . \$10 each

My check in the amount of \$. is enclosed.

Name:

Address:

.



ANN LANDERS

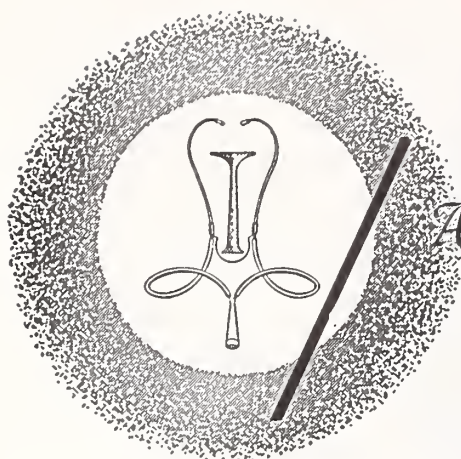
America's No.1 Human Relations Columnist

is coming to

The President's Banquet in Wichita

May 5, 1970

*Dr. and Mrs. Leland Speer cordially invite you
and your wife to a delightful evening with
Ann Landers—Medicine's No. 1 Friend.*



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the Doctor's CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

APRIL

- Apr. 10-11 22nd Annual Midwest Cancer Conference, "Cancer and Its Clinical Management," Broadview Hotel, Wichita.
- Apr. 10-12 American Society of Internal Medicine, Warwick Hotel, Philadelphia. Write: William R. Ramsey, Exec. Dir., Hearst Building, Third at Market St., San Francisco 94103.
- Apr. 12-17 American College of Physicians, Bellevue Stratford Hotel, Philadelphia.
- Apr. 25 1st annual Arthur E. Hertzler Memorial Lectures, presented by the Hertzler Research Foundation, Halstead Hospital School of Nursing Auditorium, Halstead. Registration, 1:00 p.m., with program continuing through afternoon. Reception at 5:30 p.m. followed by a banquet at 6:30 p.m. For more information, write the Hertzler Research Foundation, 309 Main, Halstead.
- Apr. 26-30 1st International Congress on Group Medicine, Winnipeg, Manitoba, Canada. New Horizons in Health Care offers a world-wide forum for the discussion of methods for provision of comprehensive health services, assessing the role of the physician as well as that of allied health personnel. Write: Congress Secretariat, 1st International Congress on Group Medicine, 425 St. Mary Ave., Winnipeg 1, Manitoba, Canada.
- Apr. 30-May 2 Annual meeting of the Mid-Central Orthopaedic Society, Skirvin Hotel, Oklahoma City. Write: Mrs. Patricia Lovan, Exec. Secretary, 14 Douglas Parkway, Wichita 67206.

MAY

- May 3-6 111th Annual Meeting, Kansas Medical Society, Broadview Hotel, Wichita.
- May 14-16 9th annual seminar on Cancer and Diseases of the Breast, Brown Palace Hotel, Denver. Write Wendell P. Stampfli, M.D., c/o St. Luke's Hospital, Denver.
- May 14-16 1st biennial meeting of the Western Conference on Criminal and Civil Problems. The newly formed forensic science group is designed to foster advanced education in medicine, specialized medical-legal areas of pathology and psychiatry, law and police administration. For information write Wm. G. Eckert, M.D., 929 N. St. Francis, Wichita.
- May 15 8th annual Pediatric Seminar, Baptist Memorial Hospital, Kansas City, Mo. Write: Medical Staff Office, Baptist Memorial Hospital, 6601 Rockhill Road, Kansas City, Mo. 64131.
- May 15-19 204th annual meeting, Medical Society of New Jersey, Haddon Hall, Atlantic City.
- May 22-29 10th International Cancer Congress, Houston, Texas. For further information write: Tenth International Cancer Congress, Box 20465, Astrodome Station, Houston, Texas 77025.

POSTGRADUATE EDUCATION

University of Kansas:

- Mar. 23-25 *Surgery*
- Apr. 6-8 *Ophthalmology*
- Apr. 13-15 *Anesthesiology*
- Apr. 17 *Infectious Diseases*

For further information write the Department of Postgraduate Medical Education, University of Kan-

sas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas 66103.

University of Colorado:

April 15-17 *Management and Care of Respiratory Insufficiency*

For further information write the Office of Postgraduate Medical Education, University of Colorado School of Medicine, 4200 East 9th Ave., Denver 80220.

University of Nebraska:

Mar. 30-31 *Psychiatry in General Practice*

For further information write: Department of Postgraduate Education, University of Nebraska Medical Center, 42nd and Dewey Avenue, Omaha 68105.

A seminar series in Nuclear Medicine has been established at the Kansas City General Hospital by the Radioisotope Division in cooperation with the medical staff. The following speakers will be participating:

Mar. 26 *Lung Function*—Wil B. Nelp, M.D.,
University of Washington

Apr. 24 *Pediatric Nuclear Medicine*—Henry N.

Wellman, M.D., Bureau of Radiological Health

All professional and technical persons are invited. The seminars will be held in the Jackson County Medical Society auditorium, Kansas City General Hospital, Kansas City, Missouri, beginning at 4:00 p.m.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

- John M. Cokeley, M.D.
The Menninger Foundation
Topeka, Kansas 66601

George M. Penn, M.D.
The Menninger Foundation
Topeka, Kansas 66601
- Arthur R. Dick, M.D.
K.U. Medical Center
Kansas City, Kansas 66103

Calvin A. Pyle, M.D.
304 Broadway
Valley Falls, Kansas 66088
- Dennis A. Diederich,
M.D.
K.U. Medical Center
Kansas City, Kansas 66103

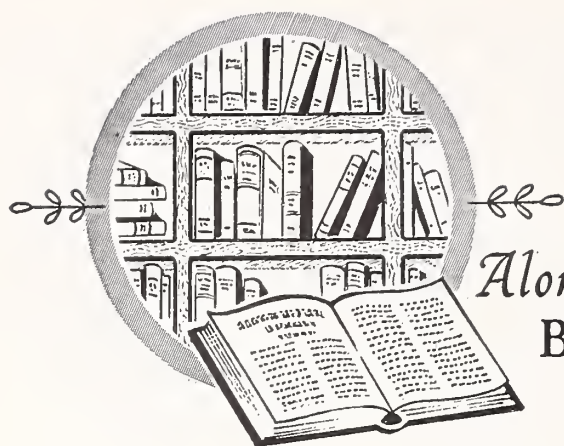
Lucile M. Ware, M.D.
The Menninger Foundation
Topeka, Kansas 66601

KANSAS STATE DEPARTMENT OF HEALTH
TOPEKA, KANSAS

Division of Disease Prevention & Control—Division of Vital Statistics—Kansas Morbidity Incidence
Summary of Cases Reported in December, 1969 and 1968

<i>Diseases</i>	<i>December</i>			<i>January-December Inclusive</i>		
	<i>1969</i>	<i>1968</i>	<i>5-Year Median 1965-1969</i>	<i>1969</i>	<i>1968</i>	<i>5-Year Median 1965-1969</i>
Amebiasis	—	—	—	11	12	12
Aseptic meningitis	—	—	1	10	6	10
Brucellosis	1	—	—	2	2	2
Diphtheria	—	—	—	—	—	—
Encephalitis, prim., infect.	—	1	1	10	14	24
Encephalitis, post-infect.	—	—	—	2	9	2
Gonorrhea	501	433	310	5,127	4,623	3,932
Hepatitis, infectious	29	24	26	294	404	294
Measles (Rubeola)	3	—	*	13	9	*
Meningococcal meningitis	—	—	2	15	28	17
Mumps	67	26	*	176	778	*
Pertussis	—	—	—	—	4	11
Poliomyelitis	—	—	—	—	—	—
Rheumatic fever	—	—	—	7	3	3
Rubella (German Measles)	49	6	*	107	126	*
Salmonellosis	17	12	14	193	284	275
Scarlet fever	15	12	12	47	48	71
Shigellosis	10	20	10	88	110	110
Streptococcal infections	139	280	280	2,081	2,757	2,757
Syphilis	141	145	103	1,860	1,412	1,239
Tinea capitis	9	1	9	46	50	63
Tuberculosis	17	24	24	207	224	235
Tularemia	—	—	—	3	5	5
Typhoid fever	—	—	—	—	4	2

* Statistics not available for 5-year median.

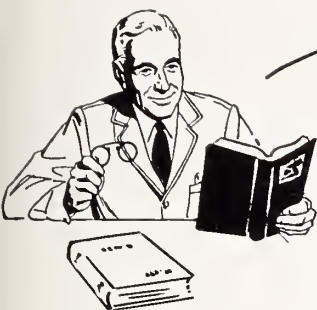


Along The BOOKSHELF

Clendening Medical Library

RECENT ACQUISITIONS

- Belinkoff, Stanton. Introduction to inhalation therapy. 1st ed. Boston, Little, Brown, 1969.
- Colson, John H. C. Postural and relaxation training in physiotherapy and physical education. 2nd ed. London, Heinemann Medical Books, 1968.
- Felstein, Ivor. Later life: geriatrics today and tomorrow. Baltimore, Penguin Books, 1969.
- Gallagher, Richard. Diseases that plague modern man; a history of ten communicable diseases. Dobbs Ferry, N. Y., Oceana Publications, 1969.
- Gelin, Lars Erik. Abdominal pain; a guide to rapid diagnosis. Philadelphia, Lippincott, 1969.
- Healy, Richard J. Emergency and disaster planning. New York, Wiley, 1969.
- Hepner, James O. Personnel administration and labor relations in health care facilities. St. Louis, Mosby, 1969.
- International virology. Basel, New York, Karger, 1969.
- Karelitz, Samuel. When your child is ill; a guide to infectious diseases in childhood. Completely rev., with the latest medical developments. New York, Random House, 1969.
- Leifer, Ronald. In the name of mental health; the social functions of psychiatry. New York, Science House, 1969.
- Mariken, Gene. A doctor's sensible approach to alcohol and alcoholism. Chicago, Budlong Press, 1969.
- Martin, Eric Wentworth. Techniques of medication; a manual on the administration of drug products. Philadelphia, Lippincott, 1969.
- Mass field trials of the diet-heart question; their significance, timeliness, feasibility and applicability, an assessment of seven proposed experimental designs: report of the Diet-Heart Review Panel of the National Heart Institute. New York, American Heart Association, 1969.
- National Communicable Disease Center. Venereal Disease Program. Manual of tests for syphilis. U. S. Govt. Print. Off., Washington, 1969.
- Nebraska University Medical Center. The future of medicine; an invitational symposium. Omaha, Nebraska, 1969.
- Psychiatry in transition; a symposium. New Jersey Dept. of Institutions and Agencies, 1968.
- Rathbone, Josephine Langworthy. Relaxation. Philadelphia, Lea & Febiger, 1969.
- Relin, Louis. A doctor discusses narcotics and drug addiction. Chicago, Budlong, 1969.
- Ritota, Michael C. Diagnostic electrocardiography. Philadelphia, Lippincott, 1969.
- Rorke, Lucy Balian. Myelination of the brain in the newborn. Philadelphia, Lippincott, 1969.
- Simmons, James E. Psychiatric examination of children. Philadelphia, Lea & Febiger, 1969.
- Sinclair, David. Human growth after birth. New York, Oxford University Press, 1969.
- Taubenhaus, Leon J. Vision screening of preschool children. Springfield, Ill., Thomas, 1969.
- Turk, J. L. Immunology in clinical medicine. New York, Appleton-Century-Crofts, 1969.
- U. S. Division of Chronic Disease Programs. Diabetes and Arthritis Control Program. Diabetes control; a public health program guide. Supt. of Doc., U. S. Govt. Print. Off., 1969.
- Walsh, Robert E. Your community hospital. Boston, Beacon Press, 1969.
- Wilder-Smith, A. E. The drug users: the psychopharmacology of turning on. 1st ed. Wheaton, Ill., H. Shaw, 1969.
- Wolf, James M. comp. The multiple handicapped child. Springfield, Ill., Thomas, 1969.
- Zborowski, Mark. People in pain. 1st ed. San Francisco, Jossey-Bass, 1969.



Book REVIEWS

SYMPOSIUM ON SPORTS MEDICINE, by the American Academy of Orthopaedic Surgeons, Oklahoma City, August, 1967. C. V. Mosby Company, St. Louis, 1969. 217 pages illustrated. \$15.00.

This is an interesting and informative collection of papers on Athletic Medicine. Like any such collection from many authors, some are well done and worthwhile but others leave "something to be desired."

The portions dealing with the "History of the Olympic Games" proved interesting but I read them only because I was writing this review.

Chapter 3 on "Effect of Vigorous Athletic Activity on Women" points up the fact that to date nothing is known to contraindicate vigorous athletic endeavor by the female. I hope this is the beginning of the end to such clichés as "girls shouldn't do that because it's not lady-like," "I don't believe girls should play football, etc.," "girls may compete in track, golf, volleyball, and the like but not in contact sports." So far there is little evidence to prove that the female can't do these things. Only style and convention dictate what is allowed.

The chapters on the arm and injuries to it were the real disappointment. I'm sure this is important information which has not been commonly aired but much was lacking for the uninformed as the entire portion lacked diagrams, pictures, and explanations that would have greatly enhanced the usefulness of the text. Without an anatomy text and medical dictionary at hand these papers are almost impossible for the average physician-reader to understand. I feel certain that some adequate illustrations could have made this far more valuable.

All in all, I was somewhat disappointed to find many statements made, tests mentioned, terms listed that I fear are not adequately discussed and explained for the average physician. This may be due to the fact that the information was presented by orthopedists for orthopedists.

In spite of the above, I believe anyone interested in Sports Medicine should have this publication as the basic information is good. The papers on "Classification of Running Gait" and that on "Subluxation of the Patella" are excellent and well presented.—*H.P.J.*

CURRENT PRACTICE IN ORTHOPEDIC SURGERY (Vol. 4) by John P. Adams. C. V. Mosby Company, St. Louis, 1969. 286 pages illustrated. \$22.50.

Current Practice in Orthopedic Surgery is a very informative publication covering a wide variety of subject matter.

This volume covers not only fractures and general orthopedics but deals with treatment of shock, basic research and a good section on regional anesthesia, including the physiology of the peripheral nerve.

Most importantly, the book presents the current thought and practice concerning orthopedic problems and related fields.

I feel this publication is an informative addition to the orthopedic literature and would be beneficial to those dealing with orthopedic problems.—*R.R.P.*

The Kansas Medical Society—1969-1970

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Northwest Kansas.....	Richard V. Ohmart, Oakley.....	George D. Marshall, Colby
Osborne.....	James E. Henshall, Osborne.....	John F. Cornely, Osborne
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Shawnee.....	Robert P. Woods, Topeka.....	Jimmie A. Gleason, Topeka
Smith.....	Hugh G. Woods, Smith Center.....	V. E. Watts, Smith Center
South Central Tri-County.....	John G. Hoffer, Medicine Lodge.....	Pedro G. Price, Wellington
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Health Education

Kansas Regional Medical Program's Continuing Education Unit

JESSE D. RISING, M.D.,* *Kansas City, Kansas*

IT HAS LONG BEEN apparent to all who have given serious consideration to the subject that continuing education for health is characterized by lack of coordination, duplication, omission, and the halfhearted efforts that are the hallmark of exercises that have a low priority. These are the characteristics nationally to even greater extent than in Kansas because this state has, for many years, made serious attempts at correcting the deficiencies. The lack of an effective organization has, however, militated against total success in this area.

The time is past when we as a state or as a nation can afford confusion and lack of coordination in continuing education for health. The geometrical increase in biomedical knowledge together with the fantastic technical advances and the accelerating public demand for more and better health care services has magnified the importance of continuing education for health professionals and made it clear that we cannot afford expensive inefficiencies and even more expensive omissions in this field.

The Kansas Regional Medical Program was one of the first five to be financed under Public Law 89-239, and from its inception has been oriented toward continuing education. In attempting to help organiza-

tions and institutions in their continuing education efforts, in addition to mounting programs of its own, it became clear that significant improvement of the region would depend more upon developing a means by which order could be brought out of the relative chaos than by putting sorely needed funds into uncoordinated effort. The Kansas Regional Medical Program has therefore recognized the need for developing its role in coordinating, facilitating, and catalyzing the development of continuing education programs at all levels.

In order to make available to the state of Kansas a facility that will be useful for compiling, analyzing, and distributing information on continuing education for health to all interested parties on a regular basis, the Kansas Regional Medical Program (KRMP) has established a Continuing Education Unit that will utilize the KRMP facility to do staff work for the state of Kansas. The organization (*Figure 1*) will be based around two groups that have an obligation and commitment to continuing education for health: (1) those assistant coordinators of the KRMP Core Staff who have continuing education responsibilities and (2) responsible persons from all the institutions and organizations in Kansas that have a relation to health education in the state. The assistant coordinators of the KRMP Core Staff are those who are responsible for liaison between KRMP

* Associate Coordinator for Continuing Education of the Kansas Regional Medical Program, and Chairman, Continuing Education Unit.

KANSAS
REGIONAL MEDICAL PROGRAM EDUCATION UNIT
ORGANIZATIONAL CHART

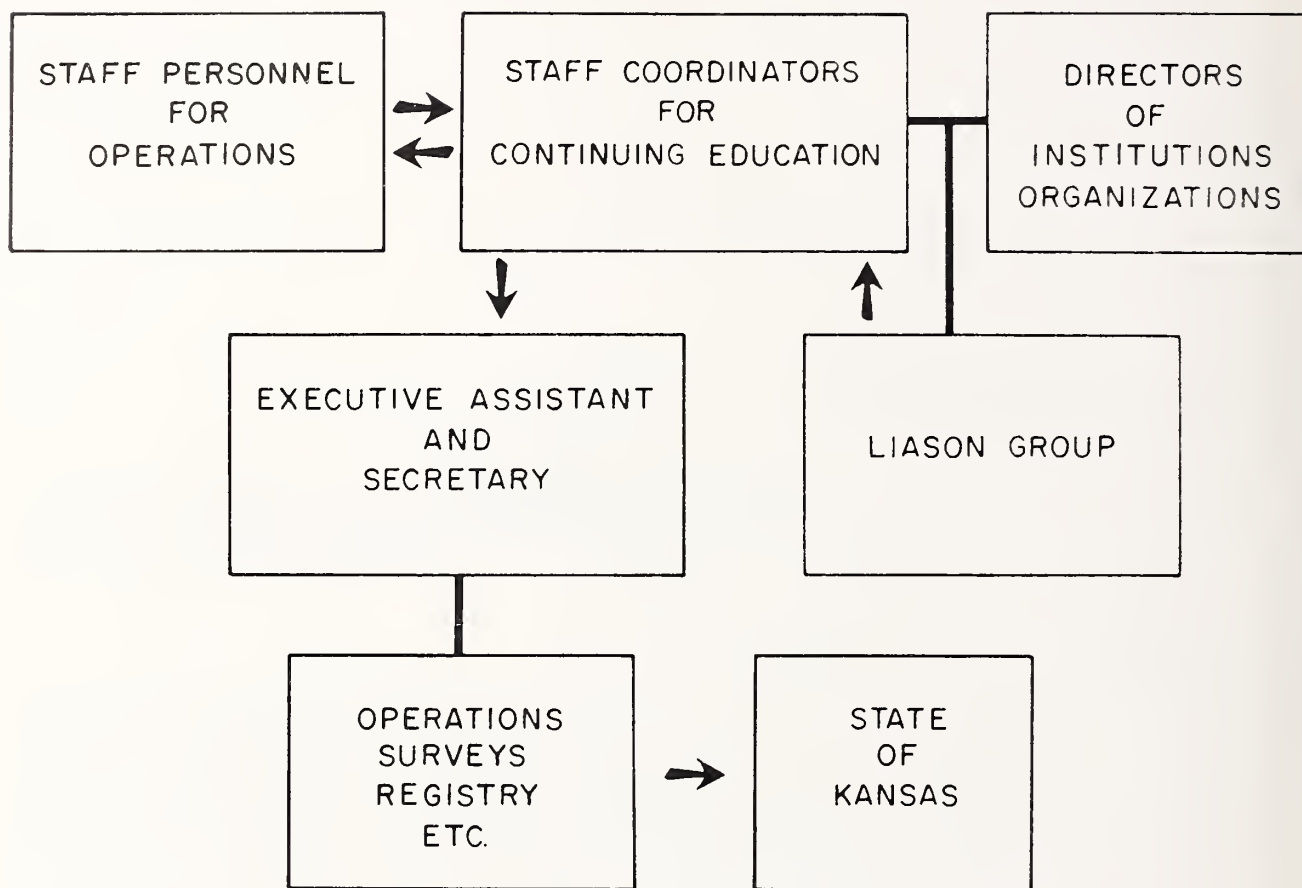


Figure 1

and private and public health organizations, health care institutions, medicine, nursing, and the multitude of health related professions. The institutions include professional organizations, hospital associations, state and local public health departments, voluntary health agencies, and educational institutions.

The two groups thus defined will together form a liaison group to determine operational goals for the Continuing Education Unit, outline appropriate methods for achieving these goals, and assist in securing in-put from their "grass roots" for the Continuing Education Unit. The staff coordinators will also, through their personnel for operations, help in securing and processing information that will come back to the Unit organization. With the advice of the staff coordinators the chairman of the Continuing Education Unit will assign to an executive assistant, who has been employed on a full-time basis to manage the operations of the Unit, the responsibility for carrying

out the surveys and other activities that have been authorized by the Continuing Education Unit.

The functions of the Continuing Education Unit, as tentatively formulated, consist of forming by the joint efforts of the staff coordinators and the directors of institutions—the liaison group—a state-wide network to gather information concerning continuing education activities, personnel, facilities, equipment, financial resources, needs, and interests. It is only through getting all of the information together in one place and making it available to everyone that duplications and omissions can be identified and rectified. To use an analogy, this will be an effort to get all of the pieces of the jigsaw puzzle on one table where they can be fitted together and where duplications as well as blank spaces in the picture can be readily seen. Since, however, we are dealing with a

(Continued on page 147)

Peer Review

Why Do We Need It?

RICHARD S. WILBUR, M.D.,* *Chicago*

PEER REVIEW! A popular term these days. First, though, what does it mean? Literally it means a review by one's equals. Therefore, it means to us a survey of a doctor's work by other doctors.

Then why do we need this peer review so desperately? The answer to this question itself becomes a multiple series of problems. They begin, of course, with government—specifically with Titles XVIII and XIX which were passed in Public Law 89-97. While the Medicare Law only calls for inhospital utilization review, experiences in the past three years have shown that far more is needed. There has been the well publicized increase in health care costs so that at the September meeting of the Medicare Health Insurance Benefits Advisory Council, the following statement was presented:

In order to provide an acceptable level of quality for the services rendered under Part B of Medicare, consideration should be given to establishing standards to govern the rendering of services by physicians, analogous to, but necessarily quite different in application from, the standards now established for most other providers of health care under Medicare. The need for broad standards for physicians' services is predicated upon the right and responsibility of the government to have assurance of the acceptable quality of all services for which it provides reimbursement. Precedents which have been set in government and non-government programs, and published studies, which point out the wide variability in quality of medical care, indicate the need.

Thus, the standards of eligibility for physicians would be a "preventive" measure to keep some physicians from ever rendering certain medical services under the Medicare program. This differs from the "post facto" stopping of abusers of the Medicare program. The latter may involve a *few* physicians, those who are grossly abusing the program. The former could potentially involve the future participation of *many* of the practicing U. S. physicians in the rendering of certain medical services under the Medicare program.

The first answer to the "why" of peer review, then, is a very practical one. Government must be as-

sured that it is getting its money's worth for all the billions it has spent with these large programs. No man can be elected to public office on a platform in which he agrees to allow the expenditure of unlimited and unchecked sums of money for any purpose—even for the health care of the American people. All of us here tonight are taxpayers and all of us would like to think that the money which we give up to our government is truly buying something worthwhile. The nonphysicians of the country have been convinced by what they read in the newspapers that they are no longer getting their money's worth for taxes spent on Medicare and Medicaid. They want, rightfully, some proof.

There are still other reasons we need to have peer review. One is malpractice. This is an ever-growing problem in some areas such as Southern California where premiums of five to sixteen thousand dollars a year are now being paid by doctors who have never been sued. The problem is acute. Over and over the point is made that the public is not assured that medical care is of high quality. Therefore, the allegations and accusations of the plaintiff's attorney fall upon open ears and juries are quite willing to believe the worst about all physicians. If they knew that an adequate mechanism of peer review existed, which assured them of the quality of health care, this problem could be alleviated as it has been in areas such as Tucson, Arizona.

The third reason why we need peer review comes from the press. The press has been quite willing to assign the responsibility for all of the rise in health care costs to the physician because it includes the vast portion which is paid to institutions, particularly the hospitals and extended care facilities. If we physicians are to take the blame for the expense, the least we can do is to take the responsibility for supervising this expenditure. In other words, we will have to supervise the utilization and, beyond that, even the efficiency and the quality of care given in the hospitals and the extended care facilities as well as that given by physicians. In some areas this review has been extended also to the ordering by physicians of such services such as physical therapy and even to the prescribing of medications—95 per cent of health care expenditure.

The fourth reason, however, is the most important and that is the problem of satisfying the American

* Presented by Richard S. Wilbur, M.D., Assistant Executive Vice President, American Medical Association, before the Council of the New England State Medical Societies, November 5, 1969, Boston, Massachusetts.

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people—the patients of the doctors of America—that they are receiving the highest possible quality of care. Let me say that I am not concerned about your particular patients. The mere fact that you are the kind of physician who has enough interest to come here tonight to listen to a talk on this subject is proof enough that you are not the kind of a doctor whose patients need this assurance. Unfortunately, there are many other doctors who have not come here tonight and who don't go to any other medical meetings, conventions, or continuing medical education. These are the men whose patients are uneasy—sometimes with good reason. The question, therefore, becomes not if we need medical care review, but who will do it?

Review of Quality Under Medicare

The Cost Effectiveness Act of 1969, which has been sent from HEW to the House of Representatives, contains a number of provisions for federal review of quality under Medicare. Some of these include, as did also Walter McNerney's Medicare Taskforce Report, suggestions for federal licensure and federal standards. So it now becomes very clearly a matter which will be handled by government, if no one else steps forward first. However, we have seen in the past situations in which the government was quite willing to accept voluntary standards. The Joint Commission on Accreditation and our specialty boards are two cases in point.

You might then ask whether there is any precedent for doctors in their organizations to engage in review of the quality of health care. There certainly is! The AMA virtually since its inception has been opposed to low standards as exemplified by quacks and chiropractors. Even before the Flexner Report, and certainly very much since then, we have been concerned with the quality of training in medical schools and with the accreditation of internship and residency programs. We have worked to improve the quality of drugs since 1900.

Within the local medical societies there have been rather elementary forms of peer review for many years. Most societies have some form of insurance review committee. This committee's activities vary from place to place, but in general, it adjudicates fees and makes some effort to explain why the fine print in an insurance contract means that the company does not have to pay the patient for the physician's work. Most local societies also have grievance committees. These, of course, take care of complaints, be they from patients, third parties or other physicians. Both of these types of committees are largely of the brush-fire type, i.e., they do not go into action until long after a problem has occurred and not until after someone else brings it to the attention of the medical society.

Another form of peer review with which we are all familiar is that in the hospital with its credentials committee, medical records committee, tissue committee, and utilization review committee. The current AMA position on peer review can be summarized with the following quote from Report F of the Council on Medical Service to the Annual Meeting in New York this year:

For more than a decade, the Council on Medical Service and its Committee on Health Care Financing (formerly the Committee on Insurance and Prepayment Plans) have recognized the need for the establishment of professional review activities by medical society review committees and utilization review committees of hospital medical staffs. Initially, this interest was generated by concern over the continuing increase in the costs of health care, particularly for hospital services, and the resulting steadily rising rates required from the public for health benefits protections. In accepting a responsibility for professional review activities, the medical profession has demonstrated its awareness of the need to conserve the patient's health care dollar, educate and inform the profession in the economics of health care, assure the appropriate use of health care personnel and facilities, and maintain high standards of medical practice.

Future Outlook

What is the future purpose of peer review then? Sometimes it is easier to start out by saying what it is not. It is not being a cop and it is not simply performing as a government agent to save tax money. The main purpose is to assure the public of the quality and effectiveness of the health care being given in that area. There are also side purposes of considerable importance, however, such as education. There is much which the person being reviewed can learn. As an example, the American Association of Medical Clinics in the last few years has set up an arrangement in which several doctors leave their practices in their different clinics and gather to spend two days inspecting a specific clinic. They do not do this as policemen who have been called in by the AAMC or by government to check on some questionable practices. They only do it when the clinic being surveyed requests such a visitation. In fact, the clinic which is surveyed pays all the expenses.

Since they do not need this investigation in order to be a member clinic, don't get any fancy certificate, and don't get any increase in the fees they can charge, you may wonder why they bother. The answer is that any group which wishes to improve, and I have never seen one yet that was close to perfection, can only benefit from a critical review by informed fellow physicians. So far, each group reviewed has thought that it was more than worth the effort and expense.

You might also ask why a doctor would leave his practice for a couple of days to go prowl through another clinic. The answer here involves more than al-

truism. It is impossible for any intelligent man to spend two days watching other doctors practice medicine without learning something which will be to his benefit. Remember, you never had a medical school course in how to run an office. Whether you are in group or solo practice, it is doubtful that you are so efficient that you could not learn even better ways, either by having another doctor visit you or by your spending time observing his practice.

So, the purpose then is not just to save taxpayers money, not just to assure the public of quality and effectiveness, but also a form of continuing medical education for both the reviewer and the reviewed.

The next problem we face then is what is it we should review? It seems obvious from the past discussion, we must review all there is of medical care, at least, and very possibly in the future, all there is in health care. Certainly we must review the medical treatment given in hospitals and extended care facilities. More recently it has become increasingly obvious that, like it or not, we must also review the medical care given in the office. It may be difficult, but it is certainly essential.

Next, you might ask, what are we looking for? First, of course, is fraud, which in medicine is no different from any other kind of fraud, and the duty of the peer review team is no different than that of any other honest citizen. Fortunately, this is rare and soon taken out of the hands of the physicians. The next item for which we look, of course, is the too high fee, something we have done traditionally for many years. Beyond that, we must now begin to look at utilization—this is the number of services rendered and even beyond that to the efficiency and quality of care rendered. It is no longer enough to tell people that they have not been cheated or just that the fee for a given service is not too high. They need assurance that they are receiving a good quality of care for the money they spend.

Techniques for Meaningful Review

The last question is probably the hardest. Once we have decided that review is necessary, what techniques can we use to make this review truly meaningful? How do we do it? The traditional technique for peer review has been the use of a Grievance Committee or Insurance Review Committee which simply looks at those physicians about whom there has been a complaint—usually already known to all the doctors in the area. But, what we're speaking of now goes well beyond this system. In a number of parts of the country it has been possible, particularly under the government programs, but not only under them, to do a form of total claims review by computer. This will give a gross review of a man's practice. From this can be developed a number of statistics: the number of visits per day; the number of visits per

patient; the number of visits per diagnosis; the number of shots given per visit; the number of laboratory and x-ray tests per visit; and from this, one may obtain an overall review of a physician's practice. Dr. Donald Harrington of the San Joaquin County Foundation has done a great deal of work on this, initially only on private insurance company contracts, later on Medicaid as well, and has been able to set up parameters of electronic observation which have enabled him to spot "deviant practitioners." Those doctors who have an unusual number of injections per patient visit in the office or others who never seem to be able to see a patient without doing a urinalysis or blood count, those who must see a patient two or three times a week for a rather routine diagnosis such as osteoarthritis, etc. Doctor Harrington would be the first to tell you that you cannot leap to conclusions simply from a computer analysis.

There are all sorts of reasons for variations from the norm in practice. The mere fact that a man practices in a different way is no proof at all that he is a "bad" practitioner. In this country, and particularly in medicine, uniformity and conformity are not necessarily the ideal.

There are other reasons for the inherent errors in the computer method including local variations, particularly the differences in style of practice between rural and urban doctors, and of the disadvantaged areas versus the middle class suburbs.

The next step must always be to pull out the original claims forms for review. Here one can look over the number of tests ordered and paid for on the basis of the diagnosis and also the amount of treatment and its relevance to the diagnosis placed upon the claims forms. Once the peer review committee has gone through the computer analyses, selected from it those claims forms it needs for review, and then reviewed those forms from unusual practitioners, it still has not established the fact that the doctors involved practiced a poor quality of care.

Let me give you an example. In my former county, Santa Clara, we have a moderate size city, San José, with some 400,000 citizens. The city is split by Highway 101. On the west side of the highway are the English speaking citizens, generally from the lower middle class on up. On the east side of the highway are the Spanish speaking citizens, usually of lower income groups. In reviewing claims under our Medicaid program, which review is done by the county medical society, we found the Spanish speaking doctors east of the highway invariably gave penicillin injections to children with colds. We Anglos, of course, were certain we had spotted an obvious abuse of the program—a group of men who were committing malpractice simply in order to collect extra funds for giving shots under the program. A committee of righteous, outraged county society mem-

bers descended upon our Spanish speaking confreres in order to bring the wayward brothers back into the fold. Well, the message was delivered all right, but it was we who got the message.

It appears that in this type of community, among the lower income Mexican-Americans, faith in physicians is erratic and on a semi-mystical basis. The doctor is given one chance at the illness. When the baby has a cold, he and the rest of the family are bundled up and brought to the doctor. Whatever the doctor does is fine with the mother, but no matter how much sicker the child gets afterward, he will not be brought back since there is not any reason to. "He's already seen the doctor." Further remedies are likely to include prayer or forms of folk medicine. Furthermore, the mothers have very little faith in pieces of paper or long explanations. Telling the mother that she should take a prescription and fill it at a drug store and then to give pills to the child if he should get sicker simply results in another piece of scrap paper in the waste basket by the front door of the doctor's office. Even giving samples of pills to be taken later is no assurance that the child will receive any further treatment. Therefore, if there is any possibility that the baby may develop bacterial bronchitis or pneumonia from the cold, the only assurance that he will survive is for the physician to actually place the penicillin into the child himself.

While we may all hope that in the future education and an elevation of income level will change this situation, for the present it continues to be malpractice, or at the very least, poor medical practice to give penicillin for colds in the English western half of the city while it is malpractice not to do so east of the highway.

There are many examples, all of which add up to mean that the review of quality can only be done locally. It can only be done by people who can understand the variations and circumstances, which in the end means that it can only be done by other local physicians. It must be done by physicians, because lawyers, for instance, are so bound by technicalities that common sense or what is best for the people rarely enters their minds and to allow them control of the program would be disastrous.

For example, in one of our large cities in California, it became evident after a period of review that of eight minority doctors in one area, six were abusing the programs through over-utilization. Too many injections per patient visit, too many laboratory tests, etc. This assumption was reinforced by visits to their offices and, therefore, the county medical society recommended that they no longer be paid under the Medicaid program. The first two telephone calls to the medical society were from the other two minori-

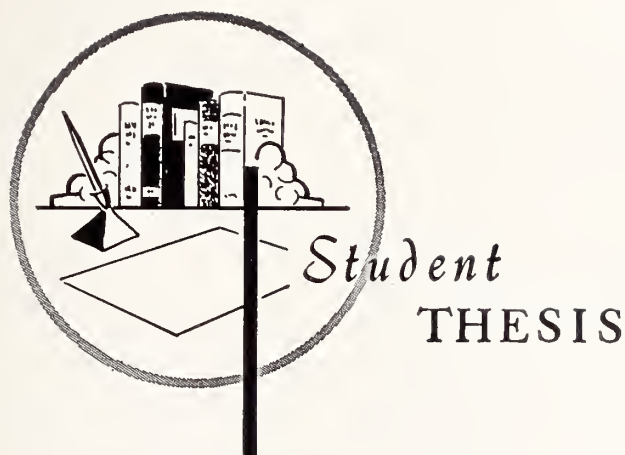
ty physicians—the "good" doctors in the area. They were terribly unhappy. "Are you trying to kill us? There are too many Medicaid patients already for the eight of us. Two of us even working 24 hours a day couldn't possibly handle the load, and we certainly couldn't give any quality of medical care. You must keep the other six doctors working for the good of the people of our part of the city."

The medical society was understandably reluctant, but it also was understanding of the problem on the basis that even over-utilized medical care is better than none at all. Those doctors were reinstated in the program, although the county medical society has since attempted a practice educational process for them. Again, what this adds up to is that there must be local control of the program, there must be local understanding of local problems and there must be an interest on the part of physicians of the medical society in seeing that medical care is given to the people.

Let me make a summary about the benefits to be derived from this program. I have mentioned the direct benefits, of course, to the taxpayer, to the reviewing physician and to the physician who is reviewed, but there are other benefits, one of these comes from publicity. It is no secret that the medical profession has a "bad image." The knowledge that the doctors in county medical societies are spending hours reviewing the quality of care can only do good things for us. In the past, as you know, we have only allowed publication of bad publicity about doctors, so it is not surprising that we have a poor image. In the past, if the doctor did something good for the patient, we have forbidden this news to be printed because we felt it amounted to advertising. However, if something bad happened—a drunk driving conviction or a malpractice suit—nothing the medical society could do would ever keep the news out of the paper. For this reason, our patients have read only unfavorable things about doctors and naturally formed that kind of an opinion. I might suggest as an aside to the principal subject that we may have to reconsider our entire concept of physician publicity. However, whether we need to change our attitude toward publicity or not, there can be no doubt about our need for peer review.

The people of this country deserve to know their medical care is all it should be. The best guarantee of this can be given only by the concerned physicians of an area working together in an effective program of peer review.

1. Congress demands it;
2. Our patients deserve it; and
3. We need it.



Laboratory Methods for Determination of Thyroid Function

WILLIAM W. BRAND, M.D.,* *Kansas City, Kansas*

THE PRESENCE of the thyroid gland has been known since the dawn of medicine. Galen believed its function was to provide a fluid for the lubrication of the larynx. The name, thyroid, which comes from the Greek word *thyreos*, means shield. The gland was so named by Wharton, who felt it was designed by Nature to give rotundity and beauty to the neck, especially in females.

Medical science has not progressed to the point where laboratory values can be accepted as the sole criterion for evaluation of thyroid function. In all cases, careful consideration of the patient's history as well as a complete physical examination are of paramount importance. In situations where there is a discrepancy between the patient's clinical status and laboratory values, the clinician must use extreme care not to apply therapy aimed at correcting a laboratory result, which may not be a true indication of thyroid function. Laboratory assessment of thyroid status is most helpful to the clinician in terms of quantitating the degree of hypo- or hyperthyroidism, or in borderline situations where clinical evaluation is equivocal.

In the discussion of the diagnostic tests which follows, the normal values given will be those which apply to the clinical laboratory of the University of Kansas Medical Center in Kansas City. The costs of certain studies are given as a matter of interest.

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Brand is serving his internship at the University of Kansas Medical Center.

Measurement of Achilles Tendon Reflex Time

It is well known to the clinician that reflexes are slowed in cases of hypothyroidism. A quantitative measurement of this effect can be made with the use of a kinemometer, which measures the current induced in a coil by a magnet strapped to the heel, or by use of the photomotograph, which records variations in the current output of a photoelectric cell as the foot moves through the path of a beam of light. Both methods employ an electrocardiograph to produce a permanent record for determination of reflex time.

Values are expressed in terms of half-relaxation time and typical findings are:

Normal: 310-340 millisec.

Hypothyroid: 450-565 millisec.

Hyperthyroid: 200-260 millisec.

In hypothyroidism, there occurs a measurable delay in the return component of Achilles tendon reflex in 90 per cent of cases. In hyperthyroidism, the test is of lesser value since in as many as 78 per cent of cases the determination may fall within the normal range. Other conditions which have been reported to cause increased relaxation time include hyperthermia, pregnancy, pernicious anemia, and some psychotic states.

This test may be of most help to the clinician in cases where iodine contamination may be a factor. It is based on the principle that in cases of hypo- or hyperthyroidism muscle contraction, and particularly muscle relaxation, time is altered. This does not appear to be on the basis of the neural component of the reflex arc.

Basal Metabolic Rate (BMR)

Ideally, this test is a measurement of the calorigenic effect of thyroid hormones. It is based on the amount of oxygen consumed by a person in a rested, fasted, i.e. "basal," state. Factors such as body surface area, age, and sex are taken into account. Values are expressed in terms of per cent of normal, plus or minus 10 per cent being the accepted range.

This BMR is seldom relied upon for the absolute measurement of thyroid dysfunction. This is because of the multitude of pharmacological, physiological, psychological, pathological, and technical factors which affect the final result. A few of the extrathyroidal conditions which affect the BMR include faulty equipment with air leaks, use of stimulating drugs, anxiety, disease states such as congestive heart failure, adrenal hyperfunction, Paget's disease, and many diseases of the skin.

Serum Protein Bound Iodine

The serum protein bound iodine (PBI) is the most commonly used laboratory method for evaluation of thyroid function. Excluding interferences, this test measures the total amount of iodine which is bound to plasma protein and thus is a measure of serum hormonal iodine. The test involves precipitation of serum protein with acid, ashing the protein to inorganic iodine, and final determination of inorganic iodine. Normal values fall in the range 3.5-8.0 micrograms per cent. Cost of this test at KUMC is \$5.00.

Extrathyroidal factors which influence the PBI are numerous. Those which are known to cause an elevation of the PBI include inorganic and organic iodides, contrast media such as used in pyelography, cholecystography, angiography, bronchography, myelography, and lymphography. Pregnancy and other hyperestrogenic states are associated with an increase in thyroid-binding globulin and therefore an elevated PBI. Drugs such as sulfobromophthalein and perphenazine cause increased concentration of protein bound iodine.

Factors which may cause decreased concentration of PBI include drugs such as ACTH, adrenal steroids, mercurial diuretics, triiodothyronine, diphenylhydantoin, testosterone, reserpine, and disease states characterized by decreased protein production such as cirrhosis, or protein losing states as in nephrosis.

Serum Butanol-extractable Iodine (BEI)

A solvent residue containing thyroxine and triiodothyronine can be extracted from serum with the use of acidified n-butyl alcohol, followed by alkalization with a carbonate solution. Hormonal iodine can then be determined, and is expressed as butanol-

extractable iodine. This method has the advantage that it is not influenced by inorganic iodines. However, like the PBI, false elevations may be the result of contamination by organic iodines such as iodine containing contrast media. The normal range for this test is 3.2-6.4 micrograms per cent.

T₄ by Column

This test is qualitatively and quantitatively similar to the BEI in that it measures the iodine concentration of a residue containing protein-bound thyroxine and triiodothyronine. This is accomplished by use of column chromatography using Dowex-1, x-2 resin. Like the BEI, this test is not affected by inorganic iodines; however, contamination with organic iodines causes elevated values which may not reflect true thyroid function. The normal range for this test is the same as the BEI, 3.2-6.4 micrograms per cent. Cost per test is \$6.50.

Thyroidal Radioactive Iodine Uptake

This test depends on thyroidal uptake of I¹³¹, a radioactive isotope which emits beta and gamma radiations. Gamma radiation gives a high degree of tissue penetration, thus allowing quantitative external measurements of radioactivity.

I¹³¹ given as a tracer dose (10-15 microcuries) will uniformly label the total body iodine pool, and, provided there are no interfering factors, will enter the thyroid in proportion to the percentage of the iodine pool being trapped by the gland during the time of measurement. Synthesis of thyroid hormone is dependent on the body pool of iodine, iodine being the rate-limiting factor. It is assumed that thyroidal uptake of iodine is proportional to the amount of thyroid hormone synthesized. It must also be assumed that the rate of secretion of thyroid hormone, and the rate of iodine uptake, are in equilibrium. Values are expressed in terms of percentage of the total amount of I¹³¹ taken up by the gland at the end of 24 hours. The normal range lies between 15 and 40 per cent. Cost of this test is \$15.00.

A number of factors in addition to hypothyroidism cause lowering of the I¹³¹ uptake. These include primary or secondary hypopituitarism, renal disease, some cases of congestive heart failure, the acute phase of Hashimoto's thyroiditis, drugs such as triiodothyronine, antithyroid drugs phenylbutazone, ampenine, organic or inorganic iodines, and exposure to perchlorate or cobalt.

In addition to hyperthyroidism, a number of factors may be associated with an elevated radioiodine uptake. These include adequately treated hyperthyroidism, iodine deficient goiter, cretinism, early cirrhosis, nephrosis, choriocarcinoma, exogenous TSH, and the rebound effect following cessation of thera-

py with iodides, thyroid substances, antithyroid drugs or adrenal corticosteroids.

Labeled T_3 -Red Cell (or Resin) Uptake

This is an in vitro test reported by Hamolsky, which allows measurement of the degree of saturation of thyroxine-binding proteins by the addition of I^{131} -labeled triiodothyronine to a sample of the patient's blood. After a period of incubation, the red cells are separated and the percentage of attached T_3 - I^{131} is determined.

This test is based on the principle that thyroid hormones are transported through the blood bound to protein. The three protein fractions involved are thyroid-binding globulin (TBG), the primary carrier, thyroid-binding prealbumin (TBPA), and albumin. Thyroxine is tightly bound to TBG; triiodothyronine, on the other hand, is loosely bound to TBG, and will not displace T_4 at binding sites. Both T_3 and T_4 bind loosely to erythrocytes. Consequently, if I^{131} labeled T_3 is incubated with unclotted whole blood, the concentration of I^{131} - T_3 which binds to the erythrocytes will be indirectly proportional to the available serum protein-binding sites. In hyperthyroidism, with increased levels of thyroid hormone, the degree of saturation of TBG is increased. Therefore, the availability for protein-binding sites for I^{131} labeled T_3 is decreased. The result is increased binding by erythrocytes.

A modification of this test has been devised by Mitchell, who substituted a resin for red blood cells.

This test has the advantage that it is not affected by inorganic iodides. There are few reported cases of organic iodine contamination. However, results are altered by factors which influence thyroid-binding capacities. This is the case during pregnancy or with drugs such as estrogens or anabolic hormones. Certain drugs invalidate the T_3 uptake by competing for TBG or TBPA binding sites, included among these are diphenylhydantoin, salicylates, and dinitrophenol.

The normal range for this test is 10.3-14.3 per cent. Cost is \$15.00.

Summary

This paper represents a review of the physiological principles and factors which influence the most commonly available tests of thyroid function, including (1) Achilles tendon reflex time; (2) Basal metabolic rate; (3) Serum protein bound iodine; (4) Serum butanol-extractable iodine; (5) T_4 determination by column chromatography; (6) Thyroidal radioactive iodine uptake; and (7) Labeled T_3 -red cell (or resin) uptake. The normal range for each test, as well as the cost, which apply at the University of Kansas Medical Center, are mentioned.

Editor's Note: References may be obtained by writing the JOURNAL, 1300 Topeka Avenue, Topeka, Kansas 66612.

Health Education

(Continued from page 140)

dynamic situation—a moving picture so to speak—it will not be enough to carry this out as a one-time effort, but will be necessary to have continuing "input" and continuing "out-put." The Unit, with the help of the data processing facility of the KRMP, will be able to supply monthly publications to all interested persons and organizations concerning matters of importance in continuing education as well as maintain a registry of facts, of potential consultants, and of teaching talent that can be tapped by anyone in the state who has need of the information or any specific elements of it, virtually at a moment's notice.

At the present time the development of the Continuing Education Unit has progressed to the point of developing a unified group of staff coordinators who regularly contribute a major amount of time and effort to the functions of the Unit. It has also secured a full-time executive assistant, Mr. Glenn Gill, who has a master's degree and a practical background in education. He will be the full-time executive assistant responsible to the Continuing Education Unit for all operations of the Unit and will be the person expected to have the most frequent and direct contact with all of those in the state of Kansas who have a role in continuing education for health.

The ultimate goal of the Continuing Education Unit of the Kansas Regional Medical Program is to establish a continuously functioning mechanism whereby all continuing education activities for health in the state can be coordinated and facilitated, whereby waste and duplication can be eliminated, and whereby educational activities can be developed to fill the needs (both felt and unfelt) that have been identified by the Unit.

TUESDAY EVENING, MAY 5

PRESIDENT'S BANQUET

ANN LANDERS, *Guest Speaker*

Annual Meeting

Kansas Medical Society

May 3-6, 1970

Broadview Hotel

Wichita

Cancer Page

The Case

A 54-year-old man was seen because of persistent, poorly defined abdominal pain in the left mid-abdomen for two months. He had experienced a loss of 20 pounds in weight during this same period. This patient had been seen in another city by a very competent physician and thorough history and physical examination and careful investigation including upper and lower gastrointestinal radiologic examinations, radiologic examination of the gall bladder and kidneys, had all failed to yield explanation for the patient's symptoms.

The patient was personally known to his secondary physician and known not to be of neurotic type. Again careful history and physical examination and repeat of all indicated laboratory and radiologic studies failed to offer a diagnosis.

Because of the recent onset of the pain and its persistence, and because of weight loss, surgical exploration was undertaken with a pre-operative diagnosis of cancer of the body or tail of the pancreas.

At laparotomy, the patient was found to have an annular carcinoma of the jejunum without evidence of extension or distant or nodal metastasis. A segmental resection was performed. The patient remains alive and free from disease two years after the surgical procedure.

Comment

Some patients require surgical exploration even when a definite diagnosis is not established pre-operatively. The cardinal symptoms of small bowel tumors are pain, bleeding, and obstruction. It is very difficult to demonstrate these lesions by radiologic means. When one or more of these symptoms is present and particularly when associated with weight loss, surgery is mandatory.

—The Committee for Control of Cancer

111th Annual Session

Kansas Medical Society

May 3-6, 1970

Broadview Hotel, Wichita

Make Your Reservations Now!

Welcome to Wichita

The Medical Society of Sedgwick County is honored to again serve as host for the 111th Annual Meeting of the Kansas Medical Society, May 3-6, 1970.

It is a pleasure to welcome you to Wichita during our Centennial Year celebration. We trust that your participation in the various activities and business of this session will be pleasant, informative, and beneficial to Kansas medicine.

The Sports Day and the President's Banquet and Programs are, as always, highlights. The Scientific Program, dealing with the broad subject of medical education, should be outstanding.

It is indeed a privilege for the members of the Medical Society of Sedgwick County to assist the officers and members of the Kansas Medical Society in making this a memorable meeting.

Ivan E. Rhodes, M.D., President

Medical Society of Sedgwick County

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A COFFEE LOUNGE WILL BE OPEN IN THE EXHIBIT AREA
THROUGHOUT THE CONVENTION

Distinguished Guest Speakers

Medical Education



Clark D. Ahlberg, Ph.D.
Wichita State University
Panel Moderator



R. W. Eichenberger, M.D.
University of Kentucky



Darrel J. Mase, Ph.D.
University of Florida



J. H. Hollomon, Ph.D.
University of Oklahoma
Luncheon Speaker



Jesse D. Rising, M.D.
University of Kansas



William L. Stewart, M.D.
University of Maryland



Richard D. Williams
Medical Student, K.U.M.C.

Abstracts

Papers to Be Presented Tuesday, May 5, 1970

FIRST SESSION

MEDICAL EDUCATION AND FAMILY MEDICINE

William L. Stewart, M.D., Baltimore

In this paper, the author traces the development of the concept of Family Medicine through the reports of several national committees, i.e., the Millis Report, the Folsom Report, the Willard Report, and the Core Content of Family Medicine.

The definition of a family physician is developed. An ideal undergraduate program to train the medical student is presented. The graduate training program at the University of Maryland Hospital is also presented in some detail.

Finally, the student enthusiasm and acceptance of the concept of Family Medicine is analyzed, and some predictions for the future are made.

SECOND SESSION

CONTINUING MEDICAL EDUCATION— WHOSE RESPONSIBILITY?

Jesse D. Rising, M.D., Kansas City

In the past two or three years continuing medical education (CME) has received widespread interest occasioned by the availability of federal financial support, and persons and organizations that had not previously given it even passing notice are suddenly on the bandwagon. Medical societies and hospitals have long been active in CME, but as political, financial, and work pressures have increased they have perhaps decreased such activities, passing some of them over to professional specialty organizations.

Following World War II a few medical schools have become involved in CME, but few have been as active as the University of Kansas School of Medicine, and even its Postgraduate Department has had to be largely self-supporting. There is little doubt that professional schools

should play a leading role in producing "formal" continuing education "courses," and that professional societies should at least continue at their present level of activity in the production of "scientific sessions." Community hospitals need to explore methods to make continuing education continuous instead of episodic and to make it more relevant to its own and its staff's problems.

This brings up the matter of definition of CME: the idea that it consists exclusively of courses, seminars, symposia, and workshops is not accurate and never has been. One of our major problems in the 70's is to take a fresh look at CME—what it really should consist of—and then put our efforts into defining education needs and devising the most effective ways of satisfying them, drawing from the whole spectrum of educational methods and modalities.

Continuing Medical Education is, therefore, everybody's responsibility: the professional schools, the professional organizations, the hospitals, and—last, but not least—the individual's. Perhaps the *smallest* role belongs to the government (especially the Federal Government) where Parkinson's Law seems inevitably to work best—or worst.

THE TEAM IN MEDICAL AND ALLIED HEALTH EDUCATION

*Ralph W. Eichenberger, M.D., M.P.H.
Lexington*

The delivery of total health care to patients, families or communities by an interdisciplinary team of professionals is a much-talked-about, little-done-about phenomenon in our society. The team concept needs to be introduced to health professionals during their training, and opportunity given them for interdisciplinary team experience.

Three years' experiences with all-student teams of medical and allied health professionals, some of the problems and profits, are discussed.

THIRD GENERAL SESSION

THE STUDENT'S RESPONSIBILITY IN MEDICAL EDUCATION

Richard D. Williams, Kansas City

What role should the student play in his medical education? Traditionally, the student played a minimal role in his own education. He was a mere passive recipient of the professor's knowledge. Little was expected of the student except class attendance, regurgitation of rote, memorized facts when asked, and quiet servitude. The student in the past accepted a role somewhat below a janitor in usefulness, knowledge, and patient care. Today, the medical student is not willing to accept that role. He wants a more active part in his educational process. The student wants to be accepted in a community of scholars as one who also is striving for knowledge and, in that sense, equal to his professor. The student no longer wants to sit and listen to an unimaginative, uninterested basic science lecturer who seldom speaks of the relevance of his topic to medicine. The student no longer wants to draw all the hospital bloods in the morning, write all the consultations, run emergency bloods to the laboratory, carry the charts for the resident, and stand in quiet servitude in the operating room—unless he also becomes a vital member of the patient care team. That doesn't mean he gets to go on rounds. It means that he is there when decisions are made about patient care. Also, when the staff man comes to see his patients, a student

is there, not as a mere lackey, but as one whose presence is valued. No longer do students want to follow a back-step course through medical school, but instead, want a voice not only in their schedule but in the staffing and approach taken. No longer do medical students want to be isolated from the private physician's world. No longer do they want to be told of their progress in terms of traditional grades. Rather, they want to be evaluated as adults: man-to-man, face-to-face. After all, medical school should be building more than the ability to pass examinations. The physician should know his capabilities and limitations, not the number of superior marks he's made.

All of these changes are not without great responsibility on the part of the student, however. The student must commit himself totally to medicine, his faculty and his patients. He has the responsibility to lead in his education, not merely follow. He has the responsibility to help improve his environment at every possible step. This includes teaching methods, health care delivery, patient care—whatever affects him. He has the responsibility to the profession to support the integrity of medicine, to engender interest in prospective health professionals and to become an active voice on health matters in his community.

As the student begins to share in the shaping of his destiny more and more he must of necessity be capable and willing to accept the responsibilities involved. If he cannot or does not he has done himself, his patient, his profession and the future students of medicine a great disservice.



Exhibits

The exhibits, located in the East Exhibition Room, will be open Sunday, 1:00 p.m. to 5:30 p.m.; Monday, 7:30 a.m. to 5:30 p.m.; and Tuesday, 8:00 a.m. to 4:30 p.m. Register at the exhibit booths for drawings to be held at the Sports Dinner on Monday evening, and the President's Banquet on Tuesday evening.

Booth No.		Booth No.	
1	BRISTOL LABORATORIES Syracuse, New York	15	KAMPAC
2	SMITH, MILLER & PATCH, INC. New York, New York	16	MID-WEST SURGICAL SUPPLY CO., INC. Wichita, Kansas
3	WILLIAM H. RORER, INC. Fort Washington, Pennsylvania	18	G. W. CARNRICK LABORATORIES Cedar Knolls, New Jersey
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14	KANSAS REGIONAL MEDICAL PROGRAM Kansas City, Kansas	29	COMTRONICS, INC. Kansas City, Missouri

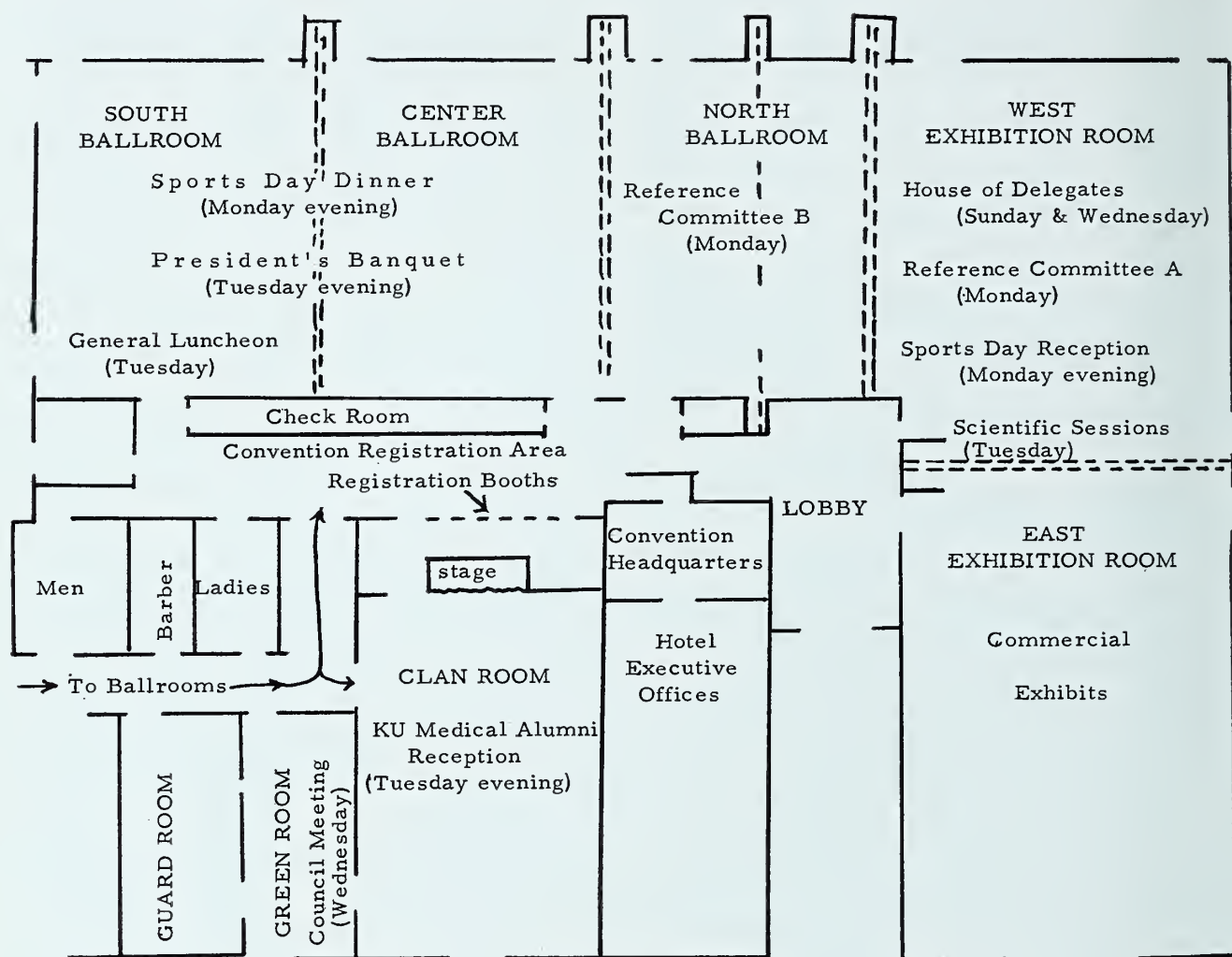
The Kansas Medical Society is grateful for
the convention program grant received from

ELI LILLY & COMPANY
Indianapolis, Indiana

A COFFEE LOUNGE WILL BE OPEN IN THE ASSEMBLY AREA
THROUGHOUT THE CONVENTION—*Compliments of Berlin Wheeler, Inc.,
Topeka, and Midland Credit Management, Inc., Hutchinson.*

KMS Annual Session

May 3-6, 1970



SUNDAY, MAY 3

2:30 p.m. *House of Delegates—West Exhibition Room*

MONDAY, MAY 4

8:00 a.m. *Reference Committees—West Exhibition Room and North Ballroom*

10:30 a.m. *Sports Day*

6:00 p.m. *Social Hour—Buffet—"Gay '90s Revue"—Ballroom*

TUESDAY, MAY 5

9:00 a.m. *Scientific Meetings—West Exhibition Room*

12:30 p.m. *General Luncheon—South Ballroom*

2:30 p.m. *Scientific Meetings*

5:30 p.m. *Reception—KU Medical Alumni, hosts—Clan Room*

7:00 p.m. *President's Banquet—Ballroom*

WEDNESDAY, MAY 6

9:00 a.m. *House of Delegates
Council Meeting—Green Room*

Hosts for the Meeting

Wichita Physicians Arranging 1970 Session

GENERAL CHAIRMAN—Lew W. Purinton, M.D.
James H. Holt, M.D., Co-Chairman

PROGRAM COMMITTEE

Norton L. Francis, M.D., and D. Cramer Reed, M.D., Co-Chairmen

SPORTS DAY

Ralph Hale, M.D., Chairman—Golfing
Harold S. Bowman, M.D., Chairman—Shooting
George H. Keene, M.D., Chairman—Bowling

EXHIBITS OPEN AT 1:00 p.m.

REGISTER FOR DRAWINGS

**A COFFEE LOUNGE WILL BE OPEN IN THE EXHIBIT AREA
THROUGHOUT THE CONVENTION**

Sunday Afternoon, May 3, 1970

Broadview Motor Hotel

12:00 KANSAS SOCIETY OF ANESTHESIOLOGISTS
Guard Room—Luncheon and Business
Meeting
William Martin, M.D.
Topeka, President

HOUSE OF DELEGATES
West Exhibition Hall
Thomas F. Taylor, M.D.
Salina, Speaker
Clair C. Conard, M.D.
Dodge City, Vice Speaker

1:00 REGISTRATION—TICKETS—INFORMATION
Convention Registration Area

1:45 REGISTRATION OF DELEGATES
2:30 FIRST SESSION

TELEPHONE NUMBER316/262-8782

Monday, May 4, 1970

Broadview Motor Hotel

7:30 REGISTRATION—TICKETS—INFORMATION
Convention Registration Area

8:00 REFERENCE COMMITTEE A
West Exhibition Room
REFERENCE COMMITTEE B
North Ballroom

VISIT THE EXHIBITS—REGISTER FOR DRAWINGS

A COFFEE LOUNGE WILL BE OPEN IN THE EXHIBIT AREA
THROUGHOUT THE CONVENTION

SPORTS DAY

KANSAS MEDICAL SOCIETY GOLF, SKEET AND TRAP ASSOCIATION

Ralph Hale, M.D., Wichita, President

10:30 GOLFING—Wichita State course (old Crestview Country Club)

12:00 BOWLING—Crestview Bowl, 21st and Woodlawn

12:30 SHOOTING—Ark Valley Gun Club, 1754 South 127th Street, East

6:00 RECEPTION—West Exhibition Room

7:30 BUFFET DINNER—Ballroom
“GAY NINETIES REVUE” featuring the Watchpocket Players
Musical Comedy—Melodrama—Skits

DORIS BUSS COMBO—Music and Dancing

*A drawing for a portable, Sony TV will be held at the dinner.
You must be present to win! Register at the Exhibit Booths.*

TELEPHONE NUMBER 316/262-8782

GAY '90s MUSICAL REVUE

The Watchpocket Players



The Watchpocket Players will provide for your entertainment and enjoyment some of the best in melodrama, music and comedy from the era of the GAY '90s.

Cheer the Hero! Adore the Heroine!

Boo the Villain!

Hiss the Villain!

THE DORIS BUSS COMBO



For Your Listening and Dancing Enjoyment

Date: May 4, 1970

Place: Sports Day Reception and Dinner—Broadview Hotel

Time: 6:00 p.m. Reception (Combo plays your requests)

7:30 p.m. Buffet Dinner

9:00 p.m. Award of Prizes—GAY '90s Revue

10:00 p.m. Dancing (Cash Bar)

Tuesday

West Exhibition Room

MORNING

7:30 REGISTRATION—TICKETS—INFORMATION
Convention Registration Area

7:30 PAST PRESIDENTS' BREAKFAST
Guard Room

7:30 KANSAS OBSTETRICAL SOCIETY—Tour Room
Breakfast and Business Meeting
Marvin D. Snowbarger, M.D.
Emporia, President

7:30 COMMITTEE ON MEDICINE AND RELIGION—
Green Room—Breakfast Meeting
William Larson, M.D.
Kansas City, Chairman

7:30 KANSAS ALLERGY SOCIETY—Room 106
Breakfast and Business Meeting
William B. Triplett, M.D.
Topeka, President

8:00 SECTION ON OPHTHALMOLOGY—Room 104
Breakfast and Business Meeting
B. John Ashley, M.D.
Topeka, Chairman

8:30 SECTION ON EAR, NOSE AND THROAT
1019 West 50th North
Breakfast and Business Meeting
HOSTESS:
Ruth Montgomery-Short, M.D.
Halstead, President

VISIT THE EXHIBITS—REGISTER FOR DRAWINGS

FIRST GENERAL SESSION

Norton L. Francis, M.D.
Wichita, presiding

9:00 WELCOME
Ivan E. Rhodes, M.D.
President
Medical Society of Sedgwick County

RESPONSE
Leland Speer, M.D.
President
Kansas Medical Society

9:10 MEDICAL EDUCATION AND FAMILY MEDICINE
William L. Stewart, M.D.
Baltimore, Maryland

9:50 THE FALLACY OF PEACEFUL CHANGE
Darrel J. Mase, Ph.D.
Gainesville, Florida

10:30 INTERMISSION TO VIEW EXHIBITS

SECOND GENERAL SESSION

James H. Holt, M.D.
Wichita, presiding

11:00 CONTINUING MEDICAL EDUCATION—WHOSE
RESPONSIBILITY?
Jesse D. Rising, M.D.
Kansas City, Kansas

11:30 THE TEAM IN MEDICAL AND ALLIED HEALTH
EDUCATION
Ralph W. Eichenberger, M.D., M.P.H.
Lexington, Kentucky

A COFFEE LOUNGE WILL BE OPEN IN
THE EXHIBIT AREA THROUGHOUT THE
CONVENTION

May 5, 1970

Broadview Motor Hotel

NOON

12:15 COMMITTEE ON AEROSPACE MEDICINE
Beech Aircraft Cafeteria

Louis Speer, M.D.
Ottawa, Chairman, presiding

12:30 GENERAL LUNCHEON—South Ballroom
Lew W. Purinton, M.D.
Wichita, presiding

UNIVERSITIES AND HEALTH
J. Herbert Hollomon, Ph.D.
Norman, Oklahoma

VISIT THE EXHIBITS
REGISTER FOR DRAWINGS

A COFFEE LOUNGE WILL BE OPEN IN THE EXHIBIT AREA
THROUGHOUT THE CONVENTION

AFTERNOON

2:00 INTERMISSION TO VIEW EXHIBITS

THIRD GENERAL SESSION

D. Cramer Reed, M.D., presiding

2:30 THE STUDENT'S RESPONSIBILITY IN MEDICAL
EDUCATION

Richard D. Williams
Kansas City, Kansas

2:50 THE FUTURE OF MEDICAL EDUCATION

Clark D. Ahlberg, Ph.D., President
Wichita State University, Moderator

PANELISTS:

William L. Stewart, M.D.
Darrel J. Mase, Ph.D.
Jesse D. Rising, M.D.
J. Herbert Hollomon, Ph.D.
Ralph W. Eichenberger, M.D.
Mr. Richard D. Williams

TELEPHONE NUMBER316/262-8782

Tuesday, May 5, 1970

Ballroom, Broadview Motor Hotel

EVENING

ANNUAL PRESIDENT'S BANQUET—KANSAS MEDICAL SOCIETY

5:30 RECEPTION FOR PHYSICIANS AND WIVES

Clan Room

Sponsored by the K.U. Medical Alumni Association

7:00 DINNER

Ballroom

Leland Speer, M.D., presiding

INVOCATION

INTRODUCTION OF GUESTS

OATH OF OFFICE TO INCOMING PRESIDENT

ANN LANDERS—*America's No. 1 Human Relations Columnist*

A deluxe AM/FM radio will be given away at the banquet. You must be present to win! Register at the Exhibit Booths.

President and President-Elect



LELAND SPEER, M.D.
President
Kansas City



FRANCIS T. COLLINS, M.D.
President-Elect
Topeka



ANN LANDERS

America's No.1 Human Relations Columnist
Guest Speaker
The President's Banquet
May 5, 1970

*Dr. and Mrs. Leland Speer cordially invite you
and your wife to a delightful evening with
Ann Landers—Medicine's No. 1 Friend.*

Wednesday, May 6, 1970

Broadview Motor Hotel

8:00 REGISTRATION—INFORMATION
Convention Registration Area

9:00 HOUSE OF DELEGATES—SECOND SESSION
West Exhibition Room

COUNCIL MEETING AT CONCLUSION OF HOUSE OF DELEGATES
Green Room

**A COFFEE LOUNGE WILL BE OPEN IN THE EXHIBIT AREA THROUGHOUT THE
CONVENTION**

Visit the Exhibits!

Register for Drawings!

East Exhibition Room

Hours

Sunday, May 3—1.00 p.m.-5:30 p.m.

Monday, May 4—7:30 a.m.-5:30 p.m.

Tuesday, May 5—8:00 a.m.-4:30 p.m.

**A portable, Sony television set will be given away at the
Sports Dinner on Monday evening, May 4.**

**A deluxe AM/FM radio will be given to the lucky winner
at the President's Banquet on Tuesday evening, May 5.**

YOU MUST BE PRESENT TO WIN!

Woman's Auxiliary to the Kansas Medical Society

May 3-6, 1970, Broadview Motor Hotel

Sunday, May 3

3:00 REGISTRATION
Mezzanine

Monday, May 4

8:30 REGISTRATION
Mezzanine

HOSPITALITY ROOM
Mezzanine, Room 102

11:00 CHAMPAGNE BRUNCH—FASHIONS OF INTER-
EST
Clan Room

HONORING STATE OFFICERS
Mrs. James R. Stark, President
Woman's Auxiliary to the Sedgwick
County Medical Society, presiding

1:30 PRE-CONVENTION BOARD OF DIRECTORS
MEETING
Clan Room

6:30 SPORTS DAY RECEPTION AND DINNER
West Exhibition Room and Ballroom

Tuesday, May 5

7:30 CONTINENTAL BREAKFAST
Hospitality Room, Mezzanine

8:00 REGISTRATION
Mezzanine

9:00 GENERAL SESSION
Clan Room

12:30 "PUNCH BOWL"
Crestview Country Club
1000 North 132nd Street, East

1:00 LUNCHEON—Crestview Country Club
Honoring Mrs. Willard C. Scrivner,
National Chairman, Home Centered
Health Care Committee, two-year
member of the Board of Directors.
Mrs. Larry E. VinZant
President, presiding

5:30 K.U. MEDICAL ALUMNI RECEPTION
Clan Room

7:00 PRESIDENT'S BANQUET—KANSAS MEDICAL
SOCIETY
Ballroom
Ann Landers, Speaker

Wednesday, May 6

8:30 REGISTRATION AND HOSPITALITY
Mezzanine, Room 102

9:30 POST-CONVENTION BOARD OF DIRECTORS
MEETING
Guard Room
Mrs. Herman Hiesterman, presiding

GOLF ACCOMMODATIONS: Wichita Country Club
GREENS FEE: \$5.00 a day

Kansas Medical Assistants Society

May 1-3, 1970, Radisson Hotel

Friday Evening, May 1

- 6:30 PAST PRESIDENTS' MEETING—President's Suite
7:00 REGISTRATION—North Mezzanine
8:00 "FRONTIER DAYS"—North Ballroom
—*Courtesy Munns Medical Supply Company, Inc.*

Saturday, May 2

- 8:00 EXECUTIVE BOARD MEETING
REGISTRATION—North Mezzanine
COFFEE AND UNIFORM STYLE SHOW—Assembly Room
—*Courtesy Midwest Surgical Supply Company and Uniform Style Shop*

- 9:30 CALL TO ORDER—South Ballroom
Gertrude Suenram, Wichita, President
Kansas Medical Assistants Society

INVOCATION AND CREED

Darlene Redmond, Quinter
President-Elect
Kansas Medical Assistants Society

WELCOME

Ivan E. Rhodes, M.D., Wichita
President
Medical Society of Sedgwick County

RESPONSE

Leland Speer, M.D., Kansas City
President
Kansas Medical Society

- 10:00 HOUSE OF DELEGATES
Maxine Williams, Kansas City
presiding
Speaker of the House

- 12:00 PRESIDENTS' LUNCHEON—Walnut Room

- 1:30 HOUSE OF DELEGATES RECONVENES

- 2:00 PEDIATRIC X-RAY
Ted W. Wolfe, M.D., Wichita

- 3:00 AAMA REPRESENTATIVE

- 3:45 CREDIT AND COLLECTIONS
The Credit Bureau, Wichita

- 7:00 BANQUET—North Ballroom

INVOCATION

Henry Loewen, M.D., Wichita
Sedgwick County Advisor

INTRODUCTION OF COMPONENT SOCIETY PRESIDENTS

GREETINGS

Ivan E. Rhodes, M.D., Wichita
Chairman, KMAS Board of Advisors

RESPONSE AND INTRODUCTIONS

Gertrude Suenram, President

INSTALLATION OF OFFICERS

"CROWN PLAYERS"

Sunday, May 3

- 7:30 BREAKFAST MEETING OF OFFICERS—Walnut Room

- 8:00 COFFEE—South Ballroom
—*Courtesy Midwest Surgical Supply Company*

- 9:00 CALL TO ORDER AND ANNOUNCEMENTS
Gertrude Suenram, President

- 9:15 GREETINGS
Marilyn Warner, Wichita, President
Sedgwick County Medical Assistants Society

- 9:30 DYNAMICS IN FAITH
Dr. Curtis Wood
Wichita State University

- 10:30 CROSSES FROM AROUND THE WORLD
Mrs. Burton Black, Wichita

- 12:00 LUNCHEON "THE JET AGE"—North Ballroom

INVOCATION: The Lord's Prayer
Blythe Miller, Parliamentarian

PRESENTATION OF GAVEL—
Gertrude Suenram

ACCEPTANCE—
Darlene Redmond

LEGAL ASPECTS OF MEDICINE
William Tinker, Attorney, Wichita

Councilor Reports

Activities in the Council Districts of Kansas

DISTRICT 3

The Third Council District is the Johnson County Medical Society.

The customary ten monthly meetings were held during 1969 and were generally well attended. Interest was stimulated by providing capable speakers to present topics of scientific medicine and others dealing with socio-economic matters. In addition, one meeting was held jointly with the Johnson County Bar Association and one with our neighboring Wyandotte County Medical Society.

Items of business seem to crop up periodically and provoke bouts of rather spirited activity. Legislation and regulations provided by government and like agencies seemed most prone to produce this sort of response.

Take the proration of fees by Welfare, for example. This proved to be of interest to our society, certainly for reasons other than pecuniary, since our area does not have a large number of welfare residents. Instead, the feeling was that if the law had in fact been broken, whether by an individual or an agency, an accounting had to be made. We obtained legal counsel and finally, the unanimous vote from the membership at the February 24, 1970, meeting to join the Medical Society of Sedgwick County in their injunction against the Kansas State Department of Welfare. We might hope that other medical societies will support this effort to obtain justice.

H. F. COULTER, M.D., *Councilor*

DISTRICT 4

The Fourth District council meeting was held at the Besse Hotel, Pittsburg, on October 25, 1969, with good attendance. The program was presented by Dr. Lucien Pyle, Topeka, representing the Kansas Medical Society, and was presented with special attention being paid to Title XVIII and XIX. Mrs. Larry VinZant, President, Woman's Auxiliary, was in attendance and met with the Auxiliary.

The vital concern in this district is in regard to the lack of doctors. It is our feeling that the K.U. Medical School should increase its facilities and graduate a much larger number of doctors than are considered at the present time. Other medical schools, such as the University of Illinois in Chicago, have

done this. We feel that this is a very urgent requirement, and that a further recommendation is that a larger percentage of doctors being graduated have the training for general practice and that they be encouraged by the medical school to practice in Kansas after their graduation and internship.

W. G. RHINEHART, M.D., *Councilor*

DISTRICT 5

On two occasions in the past, the Manhattan Country Club has burned to the ground after a joint meeting of the Riley County Medical Society and Auxiliary. The correlation is statistically significant although scientifically invalid. The 1969 meeting of this council district has been postponed until the new club opens in the spring. If the ladies come and the club goes a third time—we've had it!

During visits to District 5 county societies, we found the all-too-busy physician maintaining quality control and attempting to improve individual medical care delivery. The press does not observe the hours and energy physicians spend on meetings to improve health care for the public—Credential, Tissue, Chart Review, and Utilization Review committee meetings. And, we don't publicize these efforts in the patients' behalf, either.

For the New Year, Robert Harder, director of the Kansas State Board of Social Welfare, gave us a preemptory revision of Title XIX rules and regulations: Proration at 75 per cent of usual and customary fees frozen already at 1968 levels. The ominous trend is regulation of our affairs by the state of Kansas. No other single event has done so much to unify our intellectually disparate group of individual physicians. No definitive action has been taken by the Kansas Medical Society, except to release the physician to individual action.

Observation of the Kansas Medical Society during this political dilemma suggests the following:

- I. Expansion of the Executive Secretary's office to:
 - A. Allow complete research of our problems
 - B. Assist the Executive Committee in formulating alternatives for consideration by the Council (or House of Delegates if the issue is of sufficient magnitude)
 - C. Plan effective information release to the public

1. Through the media by a KMS spokesman
 2. Through the local society to the local media
 3. Through the physician—person to person
- II. Development of individual participation in party politics.
- III. Development of a system to inform our elected government officials (state and federal) of the position of Kansas physicians on health-related issues.

The Medicaid program in Kansas has become a political football. It would seem that physicians must be politically involved *now* if only to protect purely medical decisions.

An additional thought, we have become a political commodity. Although we are outnumbered 1,000: 1+ in the population, if we act responsibly we can disengage ourselves from political manipulation. No form of government can replace or duplicate the physician in health care!

GERALD L. MOWRY, M.D., *Councilor*

DISTRICT 7

Council District 7 is primarily that of the Flint Hills Medical Society, which consists of a five-county area of Coffey, Morris, Chase, Lyon, and Osage counties. Since Emporia is the largest city in this area, most of the membership is composed of those physicians in Emporia.

During the last year, we were most fortunate in having acquired two new physicians in the community; a pathologist and a specialist in obstetrics and gynecology. In addition, one of our physicians who was in the military service returned to re-establish his practice. We were unfortunate in the recent loss by death of Dr. F. J. Eckdall who had practiced here for many years. Dr. Eckdall's father practiced here for many years before his death also. Both of them were particularly active in industrial medicine for the Santa Fe Railroad.

Three of our physicians have retired: Dr. Joseph Parker, Dr. C. E. Partridge and Dr. C. H. Munger. Dr. J. J. Hovorka still practices to some extent, but has been relatively inactive for the last year or two. We have lost from the community by relocation, two physicians: Dr. Henry Dick of Burlington and Dr. C. B. Jenney of Emporia.

Newman Memorial Hospital is presently constructing a new building to house a nurses' training school. St. Mary's Hospital is presently extensively remodeling the physical plant.

The Flint Hills Medical Society, as usual, is quite active and the membership maintains an active interest in the activities of the Kansas Medical Society. Our primary problem, as in most areas, is physician

shortage. Therefore, to help combat this, the Flint Hills Medical Society has an active medical recruitment committee which is actively engaged in securing physicians for the community. It is our belief that this will help to counteract some of the loss in medical population that is occurring.

The District 7 annual council meeting was well attended. It was held on November 4, 1969, at the Emporia Country Club, at which time Dr. Leland Speer, President, Kansas Medical Society; Mrs. Larry VinZant, President, and Mrs. H. W. Hiesterman, President-Elect, Woman's Auxiliary; and Dr. Lucien Pyle, Representative to Medicaid, were present. In addition, Mr. Oliver E. Ebel, Executive Secretary was present.

R. F. CONARD, M.D., *Councilor*

DISTRICT 8

The component societies of the Eighth District presented no special problems or requests to their councilor during the year.

Society meetings in Butler and Cowley counties have been well attended. The circuit courses were held in Winfield and attracted an excellent attendance from both Kansas and Oklahoma.

A District 8 meeting was held in Arkansas City, October 16, 1969, with Dr. Leland Speer, President, Kansas Medical Society; Dr. Lucien Pyle, and Mr. Oliver Ebel present to discuss Society plans for the coming year, along with the legislation, medicare, and Title XIX problems.

Comprehensive Health Planning and proration of Title XIX fees to Kansas physicians have been and are being discussed in some detail in the Eighth District.

This district, like the rest of Kansas, is short of physicians, and extends to Dr. George Wolf, dean of the University of Kansas Medical Center, its support of his plan to improve the Medical Center and increase the number of physicians in Kansas.

I wish to thank everyone in the district for the help and cooperation during the last year.

SIGURD S. DAEHNKE, M.D., *Councilor*

DISTRICT 9

The medical practice in District 9 has been running along on an even keel during the past year. There have been no significant problems.

The President, Dr. Leland Speer, and Auxiliary President, Mrs. L. E. VinZant, moderated at a council district meeting in November, bringing all members up-to-date on the activities at the state level.

S. C. MCCRAE, M.D., *Councilor*

DISTRICT 10

District 10, comprised of Harvey, Marion, McPherson, Reno and Rice counties had a council meeting on November 14, 1969, at the Tabor College cafeteria in Hillsboro. Marion County acted as host and combined the meeting with their regular fall meeting with the Harvey and McPherson county societies. We were pleased to have Dr. Francis T. Collins, president-elect of the Kansas Medical Society, and Mr. Oliver E. Ebel, Executive Secretary, present some of the problems facing medicine and explain the activities of the Society.

A Councilor's letter urging their attendance had been sent to the 136 physicians in District 10 just prior to the meeting; however, only 21 attended.

There have been some members who have resented the increase in dues.

Alternate councilors have been encouraged to attend the Council meetings; Dr. R. M. Glover of Harvey County and Dr. John Blank of Reno County have attended. Others were invited but had previous commitments.

We continue to be harassed by the various news media about the high cost of medical care and the shortage of physicians. If just talk could produce physicians like it does politicians and other specialists, we would soon have plenty.

It's too bad that after a student has completed four years of college, four years of medical school and an internship, that it be necessary for two or three more years training to become a Family Physician. This program will not supply the need. The cults will benefit by it. How about a branch of the University of Kansas School of Medicine at Wichita University and use W.U. faculty and Wichita physicians as faculty? Plenty of hospitals and talent that should be used. Two hundred eighty Kansas boys applied and only 125 were accepted for the 1970-71 class.

If you have business to present, get your resolutions before the House of Delegates by sending them to the Executive Secretary soon. Make contributions to KaMPAC and maybe we can pro rate some of the bureaucrats (they are prorating us), who regard themselves as Power Elite, and prove Parkinson's Law.

Plan to attend the Annual Meeting in Wichita, Broadview Hotel, May 3-6, 1970.

RALPH R. MELTON, M.D., *Councilor*

DISTRICT 11

The Eleventh District has had a busy and fruitful year. Two projects stand out in this district which indicate the degree to which socio-economic prob-

lems have had their impact on the organizational structure of medicine.

This district became deeply involved in the new Model Cities Program. The health component of this program was principally developed by the Medical Society of Sedgwick County. It has been accepted by all concerned parties, and the Grant money has been received. The Model Cities Program will begin operations in the very near future and the medical society is proud of the part which it has taken in the development of the health component of this program.

A second matter of great importance was the response of the Medical Society of Sedgwick County to the edict of Robert Harder, director of the Board of Social Welfare, that proration of fees was to begin on January 1, 1970.

The county society has seen fit to challenge the right of the Director to take such arbitrary action. A suit has been filed against the Board of Social Welfare in the Sedgwick County District Court. We have been joined in this suit by other interested parties and do not know yet what the outcome will be.

Once again, the course on the Immediate Care of the Sick and Injured, which was held from October 30-November 1, was a resounding success. This course is given annually and is one of the most worthwhile things done by the medical society in this district.

Under the Kansas Regional Medical Program, a Cardiac Work Evaluation Unit was begun at Wesley Medical Center. The purpose of the unit is to evaluate and clarify the work capabilities of persons with a history of cardiac problems. The cost to the patient is from \$100-\$160 per evaluation and it is available to all.

The county medical society has become involved in the attempt to solve the dilemma of the Sedgwick County Hospital. Through the hospital's Board of Trustees, the local County Commissioners, the State Medical Society, and the Kansas Blue Shield, cooperative efforts are being made to define and establish a level of care required for the chronically ill. The hospital's Outpatient Clinic is in the process of being reorganized under private auspices and coordinated with the Family Practice residency program at Wesley Medical Center.

In association with the Wichita Centennial, this district will actively participate in the Health Fair which will take place on May 9-11, 1970.

The Medical Careers Loan Fund in this district now assists six medical students at K.U. and one student as a medical technologist.

The Bylaws of the Medical Society of Sedgwick County have now been completely revised and updated.

An experimental program which may have great significance throughout the state is the establishment in this district of an Insurance Review Committee whose role is purely advisory. The basis for Insurance Review Committee decisions will be the physicians' usual and customary fees.

To improve the understanding and working relationships between the medical and legal professions, a joint Medical-Legal Relations Code has been developed for the purpose of working toward solutions of common problems.

M. ROBERT KNAPP, M.D., *Councilor*

DISTRICT 12

District 12 has had no great difficulties in the past year and I don't believe there is any need of a "word-y" report. We had our annual district meeting in Pratt this year, which was well attended. Our President supplied most of the program and the auxiliary had a meeting at the same time.

Letters from the councilor were sent to the editors of the district in an attempt to keep them informed of the business of the society between annual and state meetings.

F. P. WOLFF, M.D., *Councilor*

DISTRICT 13

The Thirteenth District council meeting was held in September in Russell following our quarterly meeting of the Central Kansas Medical Society. The members and their wives were addressed by Dr. Leland Speer, president of the Kansas Medical Society; Dr. Lucien R. Pyle, Medical Co-ordinator to Social Welfare; Mrs. Gene VinZant, president of the Woman's Auxiliary; and Mr. Oliver E. Ebel, executive secretary of the Kansas Medical Society.

The major problem confronting this district has been the shortage of physicians in this area. Two communities have attracted osteopathic physicians, and they have helped relieve the shortage in their respective communities. A number of Hays physicians have formed a professional recruitment organization, which, through an organized program, will attempt to attract more physicians to this area.

There have been no major problems in the Thirteenth Council District this past year. Selective Service has requested no physicians from this district this past year. The councilor or his alternate has attended all meetings of the Council during the past year.

EUGENE T. SILER, M.D., *Councilor*

DISTRICT 14

District 14 was visited by Dr. Leland Speer, president of the Society; Dr. L. R. Pyle, Intermediary

to Welfare; Mrs. L. E. VinZant, president of the Auxiliary; and Mrs. H. W. Hiesterman, president-elect of the Auxiliary, at a pleasant, informal and informative meeting. Our staff has continued to have weekly meetings on medical topics, organized and directed by Dr. Wiggs, local representative of R.M.P., with doctors from the University of Kansas medical school, out-of-state and local physicians of District 14. Approximately 35 members have been attending these educational meetings weekly.

For the last two years, we have been fortunate in having two senior students from the University, for a period of two months. This has been an enlightening experience for the students and physicians. These young men are well trained, personable and will be an excellent addition to any medical community; we hope some will return to western Kansas.

Dr. Clark Zugg and Dr. L. R. McGill, both 50-year practicing physicians in the Great Bend community, succumbed to the infirmities of age during the year of 1969.

We have been having meetings, concerned meetings, which have not been directly on the care of the sick. Firstly, we are concerned that so few graduating from the University of Kansas School of Medicine stay in Kansas to practice medicine, and concerned about the attitude of meticulous resistance on the planners and powers-that-be at the training center, to our needs in medicine in middle and Western Kansas. Each year for the last three years we have invited head representatives to come to meet with us and there have always been expert excuses.

We are concerned that practicing physicians of Kansas have entered into a contract with Welfare, the terms of which have almost been written by the Welfare Department, and now the doctors have been informed by the press—without consulting with physicians of Kansas—that medical fees be cut 25 per cent, singling out medical groups and druggists, with no sign of reduction in income of the director, employees and all the other individuals who furnish service to the welfare monopoly.

We are concerned about AMA. We believe it has been, and now is, an ineffective organ for the medical community. Only in the short time of leadership of President Edward Annis, has there been worthwhile influence by the AMA.

Many other things that have disturbed the doctors of District 14 could be included and those mentioned can be greatly elaborated upon. We in District 14 think conditions are not going well with medicine and it is time to bring them into focus. Only in this way can we improve our lot, we hope.

MARVIN O. STEFFEN, M.D., *Councilor*

DISTRICT 15

It seems to have become a habit in the past few years to continue to report a loss of physicians in the 15th district. This year continues in the same trend with fewer men to serve the same area and essentially the same population. This is particularly true in the Iroquois Society area and as always, Liberal suffers from an acute lack of physicians.

Many of the physicians in the district have been quite active in the formation of area health planning councils, realizing that it is to our advantage to be involved in such efforts. At the present time discussion is being held in an effort to develop comprehensive mental health services in southwest Kansas, with the cooperation of the local mental health centers already active, in an effort to offer a more adequate type of mental health care to the people of the southwest area.

Underneath our concern for the area lies every physician's concern for the future of medicine in this country. With the ever-creeping encroachment of government control through Titles XVIII and XIX and our continued "bad press" we can no longer feel at ease about our position we have held for so long a time.

R. H. HILL, M.D., *Councilor*

DISTRICT 17

Our district has reorganized and is now known as the Southwest Medical Society. We have met three times during the past year, getting the organization organized.

One of the big things that received a unanimous vote was a formal protest against cutting doctors' services 25 per cent by the Department of Social Welfare.

I have attended the Council meetings in Topeka.

GALEN W. FIELDS, M.D., *Councilor*

DISTRICT 18

Hospital construction in the district has been quite progressive this year. Ottawa Hospital has added a physical therapy department and is now planning another major addition. The Lawrence Hospital opened a 42-bed convalescence care wing this past fall. These additions have proven highly valuable.

The doctor population of the district has increased or will do so, as one new general practitioner has come to Lawrence, and Ottawa is expecting two or three this coming year. These men will be most welcome.

The main problem throughout the district has been, as would be anticipated, Medicare; in particular Medicaid. Most of the physicians are quite upset about the Welfare Department's renege on their portion of the contract. An impression I have is that they feel the Welfare Department has been less than candid and honest in their dealing and simply cannot be trusted, other than to get things bogged down and their programs bashed up. It appears there is not too much the individual doctors can do other than to decline to take care of the patients for a fee and they would like some unified action by the State Medical Society. Perhaps the most effective thing would be a resignation of the physicians of Kansas from the Medicaid program as federal law requires two-thirds member participation for federal participation. The coming year should see some dramatic changes which may or may not be to the best interest of the parties involved.

ROBERT W. HUGHES, M.D., *Councilor*

NECROLOGY REPORT

Following is a list of the members of the Kansas Medical Society whose deaths have been reported since the last meeting of the House of Delegates.

<i>Name and Address</i>	<i>Age</i>	<i>1969</i>
Clark W. Zugg, <i>Great Bend</i>	83	May 9
Richard E. Baldrige, <i>McPherson</i>	57	May 29
J. Ernest Thompson, <i>Huron</i>	75	June 30
Leo J. Swann, <i>Leavenworth</i>	87	July 16
Kenneth E. Bickford, <i>Oberlin</i>	40	July 22
John E. Grimshaw, <i>Topeka</i>	55	July 29
Everett W. Johnson, <i>Towanda</i>	77	Aug. 5
Donald D. Arthurs, <i>Cherryvale</i>	37	Aug. 28
Harry A. West, <i>Yates Center</i>	80	Aug. 30
Joseph G. Evans, <i>Kansas City</i>	63	Sept. 22
Donald E. Ray, <i>Chanute</i>	54	Sept. 24
J. Warren Manley, <i>Kansas City</i>	62	Sept. 25
William R. Palmer, <i>Lawrence</i>	94	Oct. 16
John E. Sweeney, <i>Topeka</i>	46	Nov. 15
Charles H. Fain, <i>Pittsburg</i>	89	Nov. 27
Emmit E. Peterson, <i>Halstead</i>	89	Dec. 10
James E. Wallen, <i>Ottawa</i>	71	Dec. 12
Edison S. Hymer, <i>Sedgwick</i>	86	Dec. 17
Funston J. Eckdall, <i>Emporia</i>	60	Dec. 19
LaVerne B. Spake, <i>Kansas City</i>	79	Dec. 19

1970

Noble E. Naylor, <i>Wellsville</i>	82	Jan. 17
Gerald C. Bates, <i>Independence</i>	78	Feb. 6
Val Converse, <i>Horton</i>	42	Feb. 8
Lucien R. McGill, <i>Hoisington</i>	85	Feb. 14
Ross D. Skinner, <i>Wichita</i>	46	Feb. 25
Marshall E. Christman, <i>Pratt</i>	63	Mar. 10

Resolutions

To Be Introduced at First House of Delegates, May 3, 1970

RESOLUTION NO. 70-1

REFERENCE COMMITTEE A

*(Prepared by the Committee on Mental Health;
Submitted by the Commission for Scientific
Study.)*

Medical Responsibility in Mental Health Centers

WHEREAS, The need exists for guidelines to assist the governing boards in establishing and maintaining medical responsibility for patient care in mental health centers in Kansas; therefore, be it

Resolved, That the Kansas Medical Society recommends the following criteria to assure medical responsibility in all mental health centers in Kansas which offer treatment or psychotherapy for any type of mental or emotional illnesses:

1. That the governing board of each center appoint a medical director, a local physician licensed under the Healing Arts Act, who will assume medical responsibility for the clinical-treatment services of each center.

2. That the medical director be directly responsible to the governing board of each mental health center.

3. That all other staff members of the center, who perform clinical-treatment services, be directly responsible to the medical director for such functions.

4. That the medical director take final responsibility for decisions regarding diagnosis, prescriptions, assignment and treatment and that such decisions take priority so far as time commitments of staff members are concerned.

5. That, if the local medical director is not a board certified or board eligible psychiatrist, the governing board of the center appoint such a consulting psychiatrist who will consult with the medical director and with his staff to the extent that the medical director deems necessary for him best to meet his responsibilities to the center's patients.

6. That the medical director and/or the consulting psychiatrist attend regular staff meetings at the center, have supervisory conferences with center staff concerning treatment of patients, determine which staff members may or may not participate in clinical-treatment services and in general have direct enough contact with the clinical-treatment services to assure that the patients' medical and emotional needs are adequately met.

RESOLUTION NO. 70-2

REFERENCE COMMITTEE B

(Prepared and Submitted by the Commission for Scientific Study.)

Resource Physician Committee

Resolved, That the president of the Kansas Medical Society redesignate the Resource Physician Committee, to include members of the following specialties:

- | | |
|----------------------|---------------------|
| 1. Anesthesiology | 7. Otolaryngology |
| 2. Internal Medicine | 8. General Surgery |
| 3. Ophthalmology | 9. Neurosurgery |
| 4. Orthopaedics | 10. Urology |
| 5. Family Practice | 11. Plastic Surgery |
| 6. Pediatrics | |

to continue the study of the Kansas Crippled Children's Commission in an effort to broaden the present program. The president of the Kansas Medical Society is to designate the chairman of the Resource Physicians Committee, this committee would then report its recommendations to the Council of the Kansas Medical Society in October 1970, and then as soon as possible, would secure an audience to present these recommendations to the Legislative Council of the state of Kansas.

RESOLUTION NO. 70-3

REFERENCE COMMITTEE A

(Prepared and Submitted by the Commission for Scientific Study.)

Continuing Medical Education

WHEREAS, The body of medical knowledge is forever growing and many physicians find too little time to refresh and expand their medical proficiency; and

WHEREAS, Many opportunities such as hospital staff meetings, component society meetings, regional and state meetings, refresher courses, circuit courses, and meetings of the various national and sectional societies are so easily accessible; and

WHEREAS, The Kansas Medical Society is dedicated to improving care of the people of Kansas; then be it

Resolved, That the Kansas Medical Society encourage its component societies to require a minimum of twenty-five (25) hours of postgraduate medical study as a requisite for continuing active membership in said component society.

RESOLUTION NO. 70-4

REFERENCE COMMITTEE B

(Prepared by the Blue Shield Relations Committee; Submitted by the Commission for Sociology and Economics.)

Policy Communication With Blue Shield

WHEREAS, Close communication between Blue Shield and the Kansas Medical Society is essential to harmonious relationships and attainment of mutual goals; and

WHEREAS, The presentation of proposals for major policies that are of mutual interest to the medical profession and Blue Shield is the most important element in the process of effective two-way communications; and

WHEREAS, A formal arrangement for presentation and discussion of such major policy proposals would contribute to the assurance of close communication between the Kansas Medical Society and Blue Shield; therefore, be it

Resolved, That the House of Delegates approves the following arrangement as the method by which major policy proposals of common interest to medicine and Blue Shield shall be introduced, considered, and determined in the future:

1. *Source of Policy Proposals From the Medical Profession:*

(a) Any professional source including individual physicians, committees, commissions, or society and specialty associations.

(b) *Source of Policy Proposals From Blue Shield:* The Blue Shield Executive Committee or Board of Directors.

2. *Method of Consideration:*

(a) "First Reading" to the Kansas Medical Society's Committee on Blue Shield Relations for initial clearance for further consideration.

(b) "Second Reading" to Blue Shield district relations committees and/or local medical societies within each Council District.

(c) Consideration of reactions to presentations and/or actions by Blue Shield district relations committees and local medical societies by the Kansas Medical Society's Committee on Blue Shield Relations with development of appropriate resolutions to be recommended to the Commission on Sociology and Economic Study.

(d) The Medical and Surgical Advisory Committee of the Kansas Medical Society served to iron out medical and surgical problems with Blue Shield.

3. *Clearance and Implementation of Policy Proposals:*

(a) Consideration of resolutions and action by the House of Delegates of the Kansas Medical Society.

(b) Final action by the Blue Shield Board of Directors.

(c) Blue Shield staff implementation concurrent with appropriate communication to individual physicians.

RESOLUTION NO. 70-5

REFERENCE COMMITTEE B

(Prepared by the Committee on Blue Shield Relations; Submitted by the Commission for Sociology and Economics.)

Peer Review

WHEREAS, The necessity of peer review arrangements has been previously acknowledged as beneficial to the maintenance of the free enterprise system for the practice of medicine; and

WHEREAS, Blue Shield presently fulfills a responsibility as carrier and fiscal administrator for various government programs providing prepaid benefits for medical care; and

WHEREAS, A part of Blue Shield's responsibility under these programs, as well as a part of its responsibility to its own subscribing public, is to develop methods for determining reasonable professional charges, and for assuring medical need for determining reasonable professional charges, and for assuring medical need for payable professional services; and

WHEREAS, Blue Shield has requested the Medical Profession to participate in cooperative review procedures to accomplish these objectives; and

WHEREAS, Cooperative review procedures featuring the availability of local peer committee consideration is the best method of obtaining proper judgments and decisions about cases of unusual charges or professional practices; therefore, be it

Resolved, That the House of Delegates approve a cooperative program between the Kansas Medical Society and Blue Shield through which cases of unusual professional charges and cases of unusual utilization of professional services might be reviewed and determined; and be it further

Resolved, That the procedures for conducting such a cooperative review program be those outlined in the attachment to this resolution which is marked EXHIBIT A.

EXHIBIT A

**Cooperative Review Procedures
Kansas Medicine—Kansas Blue Shield****Professional Utilization Review**

1. Policy Development and Its Clearance
 - Kansas Medical Society's Professional Services Review Committee works with Blue Shield consultants to develop policy guidelines.
 - Kansas Medical Society's Professional Services Committee sponsors resolution to House of Delegates.
 - Same policy is concurrently acted upon by Blue Cross and Blue Shield boards.
2. Application of Policy
 - Blue Shield medical consultants review cases and make determinations according to policy and medical judgment.
 - Case is disposed and physician informed accordingly. If denial, doctor is apprised of the procedure for appeal.
3. Appeal and Reconsideration of Determinations
 - Doctor communicates to Blue Shield his desire to appeal a decision.
 - Blue Shield, working through guidelines established by the Kansas Medical Society and the Professional Services Review Committee, refers appeal to proper local professional peer review committee.
 - Local professional peer review committee reviews case according to policy guidelines and medical judgment, makes decision which is accepted as final by both Blue Shield and physician involved.

Review of Unusual Charges

1. Policy Development and Its Clearance
 - Basic policy is presently outlined in Resolution No. 55 and subsequent amendments of the 1968 House of Delegates and 1968-1969 series of policy memos published by Blue Shield.
2. Application of Policy
 - Blue Shield medical consultants review cases and make determinations according to policy and medical judgment.
 - Cases disposed and physician informed accordingly. If denial or reduction, doctor is apprised of right to appeal.
3. Appeal and Reconsideration of Determinations
 - Physician informs Blue Shield of desire to appeal.
 - Blue Shield refers to the Blue Shield district relations committee which acts as the peer review committee and reconsiders according to policy and medical judgment, referring recommenda-

tions to Blue Shield Board and/or Blue Shield Executive Committee for final action.

RESOLUTION NO. 70-6

REFERENCE COMMITTEE A

(Prepared by the Committee on Pre-Trial Conference; Submitted by the Commission on Sociology and Economics.)

Pre-Trial Conference

WHEREAS, The Committee on Pre-Trial Conferences has met several times this year not only as a committee of the Medical Society but also in joint meetings with members of the Kansas Bar Association; therefore be it

Resolved, That the Kansas Medical Society not approve the Pre-Trial Conference concept; and be it further

Resolved, That the committee be directed to study further the concept of arbitration; and be it further

Resolved, That this committee be directed to work with the Legislative Council in its study of malpractice.

RESOLUTION NO. 70-7

REFERENCE COMMITTEE B

(Prepared and Submitted by the Commission for Sociology and Economics.)

Utilization Review for Insurance Carriers

WHEREAS, It seems unfair to give the government programs an advantage we would not extend to private enterprise, which we endorse; therefore be it

Resolved, That the Commission on Sociology and Economics recommend that utilization or peer review be extended to all insurance carriers by locally designed plans.

RESOLUTION NO. 70-8

REFERENCE COMMITTEE A

(Prepared and Submitted by the Commission for Sociology and Economics.)

Deferred Compensation Plan

WHEREAS, The House of Delegates in 1969 adopted

Resolution No. 32 referring to Deferred Compensation Plan to be set up for the members of the Kansas Medical Society; and

WHEREAS, The said Deferred Compensation Plan has come to no fruition; therefore be it

Resolved, That the House of Delegates withdraw its approval of the Deferred Compensation Plan as presented at the May 1969, meeting.

RESOLUTION NO. 70-9

REFERENCE COMMITTEE A

(Prepared by the Committee on Health and Welfare Boards; Submitted by the Commission for Sociology and Economics.)

Representatives on the Welfare Board

Resolved, That the Kansas Medical Society recommend that there be a representative of the medical profession placed on the Kansas State Board of Social Welfare.

RESOLUTION NO. 70-10

REFERENCE COMMITTEE A

(Prepared by the Committee on Health and Welfare Boards; Submitted by the Commission for Sociology and Economics.)

Legislative Testimony

Resolved, That the president of the Kansas Medical Society seek an opportunity to testify before the Senate Sub-Committee on Medical Services.

RESOLUTION NO. 70-11

REFERENCE COMMITTEE A

(Prepared by the Committee on Health and Welfare Boards; Submitted by the Commission for Sociology and Economics.)

Health and Welfare Boards

Resolved, That the Kansas Medical Society recommend that the Kansas State Board of Health, together with its department, and the Kansas State Board of Social Welfare, together with its department, continue to be operated as separate entities.

RESOLUTION NO. 70-12

REFERENCE COMMITTEE A

(Prepared by the Committee on Health and Welfare Boards; Submitted by the Commission for Sociology and Economics.)

Task Forces

Resolved, That the Kansas State Board of Health implement recommendations for task forces utilizing professional personnel, including members of the Kansas Medical Society in matters of health, who are not employees of that board.

RESOLUTION NO. 70-13

REFERENCE COMMITTEE A

(Prepared by the Committee on Health and Welfare Boards; Submitted by the Commission for Sociology and Economics.)

Representation on Board of Health

Resolved, That the representatives of medicine and other concerned professions continue to be represented at their current ratio on the Board of Health, and that this board not be reduced in size.

RESOLUTION NO. 70-14

REFERENCE COMMITTEE A

(Prepared by the Committee on Comprehensive Health Planning; Submitted by the Commission for Health Services.)

Kansas Coordinating Council for Health Planning

Resolved, That the Kansas Medical Society commend the activities of the Kansas Coordinating Council for Health Planning and encourage this council to continue its effort to promote the concept of maintaining initiative of health planning at the local level.

The committee then requested the following statement to be presented to the House of Delegates for information.

Hospital Payment Coupled With Planning

The Committee on Comprehensive Health Planning and the Committee on Hospitals have met on four separate occasions with the Kansas Hospital Association to discuss ways in which effective hospital planning can be enforced. These committees succeeded in modifying early hospital proposals.

Enfranchisement of hospitals has already been ac-

complished in some states. The threat of federal control is increasing. For that reason and because it appears to be in the best public interest, the Kansas Hospital Association recommends Kansas Hospitals submit to controls before these are politically required. The following plan has been accepted.

A hospital intending to improve facilities or equipment in an amount of \$50,000 or 5 per cent of its operating budget, whichever is less, must obtain prior approval of its plan by the area comprehensive health planning council or accept a 20 per cent reduction in Blue Cross payments which presumably will include Title XVIII and Title XIX payments also.

An appeal mechanism is provided which will consist of one representative selected from each officially recognized area health planning council except for the region involved. The decision of this appeal body is final and its finding, after hearings, is binding upon Blue Cross.

RESOLUTION NO. 70-15

REFERENCE COMMITTEE A

(Prepared by the Committee on Comprehensive Health Planning; Submitted by the Commission for Health Services.)

Position and Purpose of Comprehensive Health Planning

WHEREAS, Comprehensive health planning involves all phases of health care and ultimately will affect the manner in which physicians' services are delivered; therefore be it

Resolved, That the Kansas Medical Society recommend to the Kansas Coordinating Council for Health Planning the following statement of position and purpose:

1. That planning be locally initiated and that residents in the area participate in the definition and in the solution of local problems.
2. That physicians representing their local medical society actively participate in the work of area planning councils.
3. That regions be locally developed according to the judgment of residents living within the area.
4. That the local medical society encourage persons with the highest degree of professional and technical competence in their respective fields to actively participate in area comprehensive health planning councils.
5. That encouragement be given on the local,

the area, and the state level for continued discussion with allied professional groups.

RESOLUTION NO. 70-16

REFERENCE COMMITTEE A

(Submitted and Prepared by the Commission on Education.)

RMP and Comprehensive Health Planning

WHEREAS, Programs sponsored by comprehensive health planning and by regional medical planning are often similar and sometimes overlapping; and

WHEREAS, It appears that the Congress will sometime in the future create a single organization combining these two; and

WHEREAS, This Society now has a separate committee working with each of these planning organizations; and

WHEREAS, This also results in some overlapping effort; therefore be it

Resolved, That the Society shall have one committee to serve as advisors to both comprehensive health planning and to regional medical program.

RESOLUTION NO. 70-17

REFERENCE COMMITTEE B

(Prepared by Postgraduate Education Committee; Submitted by the Commission on Education.)

Physician Shortage

WHEREAS, Kansas loses more medical graduates to other states than it gains by immigration; and

WHEREAS, Kansas has a deficit of physicians compared with the nation as a whole; and

WHEREAS, There are areas of Kansas in which there is a marked shortage in physicians and other health services as compared with other regions of the state; and

WHEREAS, Socio-economic factors are said to be related to the shortages; and

WHEREAS, The methods and modes of medical education may be factors in introducing students of medicine to the opportunities in Kansas and preparing them for practice in Kansas; and

WHEREAS, The Kansas Medical Society should assume leadership in solving problems in health services, education and medical socio-economics rather than permit such leadership to fall to other agencies by chance or to government with the resultant loss of leadership by organized medicine; and

WHEREAS, Licensure problems arbitrarily prevent

some medical graduates from coming to Kansas; therefore be it

Resolved, That the Kansas Medical Society constitute an *ad hoc* group to study the causes of the named problems in depth and propose remedies; and be it further

Resolved, That this study group be composed of representatives of the Commission on Socio-Economics, Commission on Health Services, and Commission on Education; and be it further

Resolved, That this study group work closely with consultants from the State Department of Health, the University of Kansas School of Medicine, and such other institutions and organizations as can offer substantial information and assistance.

RESOLUTION NO. 70-18

REFERENCE COMMITTEE B

(Prepared and Submitted by the Commission on Education.)

The KUMC Package Plan

WHEREAS, The Dean and the Provost of the University of Kansas School of Medicine presented the package plan for the future development of the medical center; therefore be it

Resolved, That the six points of the plan be approved by the Kansas Medical Society as follows:

1. The basic budget must be increased. When outside resources diminish, the state must find a way to make up this difference.
2. It is recommended that together or separately departments of community medicine and family practice training shall be established.
3. The curriculum will be revised to offer a medical degree in three (3) years of eleven (11) months each to those students who wish to take the accelerated course. This will at some point in the future provide two graduating classes in one year.
4. The state will be asked to support existing and new intern and resident programs in Kansas providing competitive salaries that will serve to keep physicians in this state.
5. Future expansion requires planning, and money will be requested for consideration of expanded clinic and hospital facilities. If the hospital could be modernized and additional basic science facilities constructed, the school could be expanded from its present 125 students per class to 170 students per class at reasonable cost.
6. Increase the effectiveness of the preceptor program by utilizing physicians and health delivery systems in larger Kansas cities.

RESOLUTION NO. 70-19

REFERENCE COMMITTEE B

(Prepared by the Committee on Relations with News Media; Submitted by the Commission on Education.)

Public Information Program

WHEREAS, The Kansas Medical Society needs to have a specific program for the improvement of relations; and

WHEREAS, The Committee on Relations with the News Media has researched this matter; and

WHEREAS, The committee is proposing that the presentation by Parkinson's and Associates does in fact propose a specific program with all facets of the news media; therefore be it

Resolved, That the House of Delegates authorize a sub-committee consist of the President, President-Elect, First Vice President and the Executive Director to take action on press releases and any information prepared by Mr. Hank Parkinson regarding the Kansas Medical Society's public relations program; and be it further

Resolved, That the House of Delegates authorize the Council of the Kansas Medical Society to approve the expenditure of funds necessary to implement the program as outlined by Parkinson and Associates.

RESOLUTION NO. 70-20

REFERENCE COMMITTEE B

(Prepared by the Committee on School Health; Submitted by the Commission on Education.)

Athletic Physical Examination

WHEREAS, The Kansas Medical Society desires to maintain the highest degree of health in all children and youth in Kansas, including participants in school athletic programs; and

WHEREAS, Participation in school athletics may present an extraordinary health hazard to school children who have physical defects or chronic diseases; and

WHEREAS, Such defects and diseases can be best detected and evaluated by a physician at the time of a complete physical examination in his office; and

WHEREAS, The frequency of such examinations should be such that such defects and diseases would be detected before the student participates in athletics; and

WHEREAS, The availability of physicians presents a practical limit to the frequency of such examinations

and dates when they can be performed; therefore be it

Resolved, That

1. The Kansas Medical Society recommend to the Kansas School Health Advisory Council and the Kansas State High School Activities Association the following regarding participation in school athletics:

(a) A complete physical examination is necessary prior to participation in any school athletic program.

(b) Such examination should be conducted individually by a physician in his office or under similar circumstances.

(c) The date of such examination should be proximal enough to the date of participation in athletics so that assurance can be given to the participant and the school that no unusual risk is involved.

(d) An interval of no more than twelve (12) months is necessary to provide that assurance.

(e) A certificate from the physician to the school should convey the following:

(1) The date that the most complete physical examination was performed.

(2) A statement that the student is able to participate in school athletics.

(3) Any defects which would contraindicate complete participation.

(4) Modifications which should be made in his athletic program in accordance with (c) above.

RESOLUTION NO. 70-21

REFERENCE COMMITTEE B

(Prepared and Submitted by the Commission on Education.)

Physical Examinations

WHEREAS, Inquiries have been submitted to the Commission for Society Organization regarding the responsibility of Kansas Medical Society members performing physical examinations for groups of young people participating in activities such as the YMCA's Little League baseball and football program and the Boy Scouts of America camping trips, etc.; and

WHEREAS, A uniform response to such requests by members of the Kansas Medical Society is deemed desirable; therefore be it

Resolved, That the physicians' ethical obligation in connection with any such physical examinations is to insure that they be performed in full accordance with accepted medical standards, preferably in the physician's office; and be it further

Resolved, That financial remuneration, if any, for the above stated physical examinations is a matter to be determined by discussion between the physician and the sponsors of said groups, and that a standard form be developed and used.

RESOLUTION NO. 70-22

REFERENCE COMMITTEE A

(Prepared and Submitted by the Commission for Society Organization.)

By-Laws

Resolved, That the Kansas Medical Society amend its Constitution and By-Laws under section 11.21 by adding a comma after the last word "county" and following that by adding these words: "with the exception of medical student societies," so that the section will read: "each county be included among the component societies in this state, but only one (1) component society may be chartered in a county, with the exception of medical student societies."

RESOLUTION NO. 70-23

REFERENCE COMMITTEE A

(Prepared by the Committee on Non-Member Physicians; Submitted by the Commission for Society Organization.)

By-Laws

WHEREAS, The Kansas Medical Society has in its By-Laws a membership category for interns and residents, but in order to be counted as active members, they must have the full privilege of voting and holding office; therefore be it

Resolved, That the Kansas Medical Society amend its Constitution and By-Laws and make a new section 1.6125 to read: "interns and residents engaged in full-time training be given full privileges of membership including the right to vote and hold office and be assessed annual dues of one dollar (\$1.00)," and delete section 1.621.

RESOLUTION NO. 70-24

REFERENCE COMMITTEE A

(Prepared by the Committee on Non-Member Physicians; Submitted by the Commission for Society Organization.)

Student Component Society Membership

WHEREAS, It is the intent of the Commission for Society Organization that a separate component so-

ciety may be chartered consisting of students regularly enrolled in a fully accredited school of medicine operating in Kansas; and

WHEREAS, The Commission intends the Medical Student Society to have representation in the House of Delegates in the same proportion as other chartered single county societies; and

WHEREAS, The Commission intends that membership in such society shall be attained as is membership in any other component society, except the Kansas Medical Society will assess no dues to such members and except that their membership shall terminate upon their graduation; there be it

Resolved, That Section 11.41 be amended by adding at the close, "*also eligible for membership shall be students attending accredited medical schools in Kansas through the chartered Student Medical Society*"; and be it further

Resolved, That the By-Laws be amended by adding a new section 1.6126, that members of the Student Medical Society shall be assessed no dues and those desiring to receive the JOURNAL may do so upon payment of one-half the subscription price; and be it further

Resolved, That Section 1.633 be deleted.

RESOLUTION NO. 70-25

REFERENCE COMMITTEE A

(Prepared by the Committee on Osteopathic Physicians; Submitted by the Commission for Society Organization.)

Osteopathic Membership

WHEREAS, The AMA at its House of Delegates meeting in December 1968 recommended that its component state and county medical societies amend their By-Laws to admit qualified Doctors of Osteopathy as members; and

WHEREAS, The Healing Arts Act of the state of Kansas, which provides for a joint board of examiners, allows Doctors of Osteopathy the right to take an examination to practice medicine and surgery and upon satisfactory completion of this examination they receive all the rights and privileges of the Doctor of Medicine; and

WHEREAS, It will be in the public interest to continue the upgrading of osteopathic practice; therefore be it

Resolved, That the Kansas Medical Society amend its By-Laws to allow the admission of qualified osteopaths according to the following changes:

Section 1.0—MEMBERSHIP

1.611 Members who pay full dues. Members of a component society who hold a degree of Doctor of

Medicine, Doctor of Osteopathy, or their equivalent, and are fully licensed to practice medicine and surgery by the Kansas State Board of Healing Arts.

Section 4.0—GENERAL MEETINGS AND SECTIONS

4.43 Residents and interns who are graduates of approved medical or osteopathic schools and who are certified by their hospital.

4.44 Medical students of approved medical and osteopathic schools who are certified by their schools.

Section 11.0—COMPONENT SOCIETIES

11.41 Since membership in this Society is dependent on that of the component society, any reputable and ethical physician with the degree of Doctor of Medicine or Osteopathy, or their equivalent, from an accredited medical or osteopathic school, fully licensed to practice medicine and surgery by the Kansas State Board of Healing Arts, and the majority of his professional work being conducted in the state, shall have the privilege of applying for component society membership.

11.8 The Annual Report—The secretary of each component society will maintain a roster of its membership and of non-affiliated registered doctors of medicine or osteopathy within its boundaries. The roster must include for each member his address, medical or osteopathic school and date of graduation, date of license to practice in Kansas, and the dates of past changes in membership status. Only the names and addresses of non-members need be recorded.

RESOLUTION NO. 70-26

REFERENCE COMMITTEE B

(Prepared and Submitted by the KaMPAC Board of Directors.)

Dual Billing

WHEREAS, Forty-one (41) of the states have some form of dual billing of PAC dues with county, state and A.M.A. dues; and

WHEREAS, Many of them do this at the state level; and

WHEREAS, The results overwhelmingly show that the interest and support for the PAC and political action is enhanced in the states; therefore be it

Resolved, That the House of Delegates authorize the Kansas Medical Society to implement a more beneficial means of dual billing in Kansas.

NOMINATING COMMITTEE

The Nominating Committee met on Sunday, February 8, 1970, and submits to the House of Delegates the following list of nominations for the elective offices of the Kansas Medical Society. Wherever more than one nomination appears these are presented in alphabetical order. A very brief biography accompanies each name.

President-Elect

William J. Reals, M.D., Wichita. Born in 1920. Graduated from Creighton University School of Medicine in 1945. This year served as First Vice President and AMA Alternate Delegate.

First Vice President

Kenneth L. Graham, M.D., Leavenworth. Born in 1921. Graduated from Ohio State University School of Medicine in 1945. This year served as Second Vice President.

Second Vice President

John N. Blank, M.D., Hutchinson. Born in 1907. Graduated from the University of Kansas School of Medicine in 1938. Member of the Kansas State Board of Health and Chairman of the Insurance Committee of the Society.
George D. Marshall, M.D., Colby. Born in 1909. Graduated from the University of Kansas School of Medicine in 1936. Chairman of the Commission on Society Organization.

Alex Scott, M.D., Junction City. Born in 1923. Graduated from the University of Wisconsin School of Medicine in

1948. Has served as Councilor. Chairman of the Veterinary Medicine Committee.

Edward F. Steichen, M.D., Lenora. Born in 1905. Graduated from the Rush Medical College, University of Chicago in 1930. Has served as Councilor. Member of the Kansas House of Representatives.

Evan R. Williams, M.D., Dodge City. Born in 1925. Graduated from the Northwestern University Medical School in 1952. Has served as Councilor.

Constitutional Secretary

Emerson D. Yoder, M.D., Denton. Born in 1914. Graduated from the University of Kansas School of Medicine in 1949. Is now serving as Constitutional Secretary.

Treasurer

Chester M. Lessenden, Jr., M.D., Topeka. Born in 1918. Graduated from the University of Kansas School of Medicine in 1943. Is now serving as Treasurer.

A.M.A. Delegate

Lucien R. Pyle, M.D., Topeka. Born in 1901. Graduated from the Rush Medical College in 1928. Has been President of the Kansas Medical Society. Is now serving as A.M.A. Delegate.

Alternate A.M.A. Delegate

George E. Burket, Jr., M.D., Kingman. Born in 1912. Graduated from the University of Kansas School of Medicine in 1937. Has been President of the Kansas Medical Society.

M. Robert Knapp, M.D., Wichita. Born in 1923. Graduated from the New York University School of Medicine in 1947. Is now serving as Councilor.

House of Delegates

Sunday—May 3

2:30 p.m.—West Exhibition Room

Wednesday—May 6

9:00 a.m.—West Exhibition Room

Reference Committees

Monday—May 4—8:00 a.m.

Committee A—West Exhibition Room

Committee B—North Ballroom

The President's Message

1970 Kansas Legislature

The 1970 Kansas Legislature has come to an end and it was a dandy. We didn't sponsor any legislation this year, but plenty was introduced that we didn't want. Thanks largely to the best legislative representative in the state of Kansas, we were able to come through this session unscathed. I only wish all of you could see and observe Mr. Ebel in his relations with the legislature. His approach is that the Kansas Medical Society is not asking for legislation for themselves, but only for the best health legislation for the public. He has the deftest touch I have ever seen, and while nobody gets everything he wants in these situations, his average is tremendous.

May I cite an example. On the day before the projected adjournment, bills and amendments were in and out of consideration at a tremendous pace. The bill on sales tax extended coverage to all professional charges. Mainly through the efforts of our on-the-spot representative, physicians' charges were removed at the last minute.

Most of the letters I have received in my official capacity have been, if not complimentary, at least suggestive of improvements in a constructive manner. I recently received one that was neither of these. It was quite abusive and indicated that the State Society was a worthless organization run by spineless medical politicians. Were it not for this organization, the writer of that letter (as well as the rest of us) would soon be collecting, keeping account of, and sending to Topeka three per cent of his gross receipts. This alone should be worth the payment of this year's dues.

There were nearly 75 House and Senate bills relating to medicine that we kept watch on. Your officers and committee chairmen testified successfully against



several of these. Among them were bills to require Blue Shield to pay for chiropractic x-rays, to pay psychologists to same fee schedule as psychiatrists, to pay chiropractors for all services on the same basis as physicians and osteopaths, and to remove the wording "reasonable, usual and customary" from welfare fees.

Other than the funding of Title XIX, which is still a bit murky, we feel that our efforts were successful; at least we got by another year without any damaging legislation.

Hope to see you all at the convention in Wichita.

LELAND SPEER, M.D., *President*



During the past two legislative sessions there has been an exceptional interest in providing health care for children. In the session just concluded, amendments to the existing battered child law now require others, including school teachers, to report instances of suspected child abuse. The child labor law was amended considerably. The legislature also voted for an in-depth study by the legislative council of the crippled children's program.

Passed this session and already signed by the governor is a bill to require rubella immunization of children. There will be an appropriation of \$150,000 to purchase material and supplies. The law will require all children entering grade school in Kansas for the first time to have a rubella immunization in addition to others, and as of January 15, 1971, every pupil under age 10 shall have such immunization.

One year ago the legislature enacted a number of laws relating to health care of children. The JOURNAL has been advised that some physicians are not aware of these changes and is again reporting on laws currently in effect relating to physicians who are asked to give professional care to minors.

The Good Samaritan Act

The law now states that a physician may render emergency care or assistance without compensation to any minor involved in an accident or in competitive sports or other emergency without first obtaining the consent of the parent or guardian of such minor. The physician is not liable for civil damages except when occasioned by gross negligence or by wilful or

wanton acts of omissions. However, the ordinary standards of care shall apply in the physician's office, clinic, emergency room or hospital whether or not the physician receives compensation.

Venereal Disease

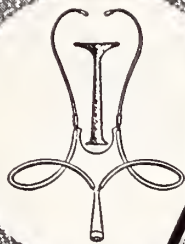
Persons under 21 years of age may give consent for examination and treatment of venereal disease without consent of parent or guardian. The physician may, but shall not be obligated to inform the spouse, parent, custodian, guardian or fiancé of such person concerning the treatment. If he elects to inform another person, the physician shall not have violated the right of privileged communication, nor shall the physician incur civil or criminal liability by reason of any adverse reaction to medication administered, providing reasonable care has been taken to obtain from such patient any history of sensitivity or previous adverse reaction to the medication.

Consent of Minor

Any person 16 years of age or over where no parent or guardian is immediately available may give consent to the performance and furnishing of hospital, medical or surgical treatment.

Donation of Blood

Any person 18 years of age or older shall be eligible to donate blood voluntarily without the necessity of obtaining parental permission or authorization, providing that any minor shall receive no compensation for any blood donated.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the Doctor's CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

APRIL

The Woman's Auxiliary of the American Electroencephalographic Society offers an annual award, known as the Hans Berger Award, of \$300 for a meritorious manuscript dealing with electroencephalography, either clinical or experimental. Eligibility for the award is limited to individuals at pre-doctoral (Ph.D. or M.D.) and early post-doctoral levels. Candidates shall not be more than five years post-doctoral or two years post-residency.

Manuscripts should be submitted by June 1, 1970 to: Dr. Reginald G. Bickford, Program Chairman, Neurosciences Department, School of Medicine, University of California at San Diego, La Jolla, California 92037.

The paper selected will be included as part of the Society's scheduled scientific program. A paper which has been submitted to the Program Committee for regular presentation may also be considered for the award. In this case, the *full* manuscript must be submitted to the Program Committee with the notation that it is submitted for consideration for the award.

Apr. 25 1st annual Arthur E. Hertzler Memorial Lectures, presented by the Hertzler Research Foundation, Halstead Hospital School of Nursing Auditorium, Halstead. Registration, 1:00 p.m., with program continuing through afternoon. Reception at 5:30 p.m. followed by a banquet at 6:30 p.m. For more information, write the Hertzler Research Foundation, 309 Main, Halstead.

Apr. 26-30 1st International Congress on Group Medicine, Winnipeg, Manitoba, Canada. New Horizons in Health Care offers a world-wide forum for the discussion of methods for provision of comprehensive health services, assessing the role of the physician as well as that of allied health personnel. Write: Congress Secretariat, 1st International Congress on Group Medicine, 425 St. Mary Ave., Winnipeg 1, Manitoba, Canada.

Apr. 30-May 2 Annual meeting of the Mid-Central Orthopaedic Society, Skirvin Hotel, Oklahoma City. Write: Mrs. Patricia Lovan, Exec. Secretary, 14 Douglas Parkway, Wichita 67206.

MAY

May 3-6 111th Annual Meeting, Kansas Medical Society, Broadview Hotel, Wichita.

May 14-16 9th annual seminar on Cancer and Diseases of the Breast, Brown Palace Hotel, Denver. Write Wendell P. Stampfli, M.D., c/o St. Luke's Hospital, Denver.

May 14-16 1st biennial meeting of the Western Conference on Criminal and Civil Problems. The newly formed forensic science group is designed to foster advanced education in medicine, specialized medical-legal areas of pathology and psychiatry, law and police administration. For information write Wm. G. Eckert, M.D., 929 N. St. Francis, Wichita.

May 15 8th annual Pediatric Seminar, Baptist Memorial Hospital, Kansas City, Mo. Write: Medical Staff Office, Baptist Memorial Hospital, 6601 Rockhill Road, Kansas City, Mo. 64131.

May 15-19 204th annual meeting, Medical Society of New Jersey, Haddon Hall, Atlantic City.

May 22-29 10th International Cancer Congress, Houston, Texas. For further information write: Tenth International Cancer Congress, Box 20465, Astrodome Station, Houston, Texas 77025.

POSTGRADUATE EDUCATION

University of Kansas:

May 7-8 *Inhalation Therapy*

May 11-12 *New Concepts in Cardiac Arrhythmias*

May 14-15 *Basic Medical Librarianship*

For further information write the Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas 66103.

University of Colorado:

- July 6-9 *Ophthalmology (Estes Park)*
 July 19-22 *Pediatrics (Aspen)*
 July 27-31 *Internal Medicine (Estes Park)*

For further information write the Office of Postgraduate Medical Education, University of Colorado School of Medicine, 4200 East 9th Ave., Denver 80220.

University of Nebraska:

- May 14-16 *Surgery and 15th Annual Trauma Day*
 May 21-22 *Cardiovascular Disease*

For further information write: Department of Postgraduate Education, University of Nebraska Medical Center, 42nd and Dewey Avenue, Omaha 68105.

A seminar series in Nuclear Medicine has been established at the Kansas City General Hospital by the Radioisotope Division in cooperation with the medical staff. The following speakers will be participating:

- Apr. 24 *Pediatric Nuclear Medicine*—Henry N. Wellman, M.D., Bureau of Radiological Health

All professional and technical persons are invited. The seminars will be held in the Jackson County Medical Society auditorium, Kansas City General Hospital, Kansas City, Missouri, beginning at 4:00 p.m.

- May 21-23 *Pediatric and Adolescent Psychiatry.*
 Sponsored by the Mound Park Foundation, the Department of Medical Education of the Bayfront Medical Center, the University of Florida College of Medicine, Pinellas County Medical Society and the Florida Academy of General Practice. Tides Hotel and Bath Club, Redington Beach, St. Petersburg, Florida.

W.S.U. HEALTH COLLEGE DEAN APPOINTED

D. Cramer Reed, M.D., Wichita urologist, was recently named Dean of the new College of Health Related Professions at Wichita State University and Associate Dean of the University of Kansas Medical Center. The appointment, to become effective April 1, 1970, was made by W.S.U. President Clark Ahlberg and Dr. George A. Wolf, Jr., Provost and Dean of the University of Kansas Medical Center. Establishment of the new college was authorized this year by the Kansas Legislature with initial funding of some \$70,000.

In his new position, Dr. Reed will work with interns and students in other health related professions and will coordinate these training programs with local resources and the Medical Center.

Dr. Wolf, commenting on Dr. Reed's relationship with the Medical Center, said he would represent the Center in Wichita and assist in the development of cooperative educational relationships with respect to private hospitals in Wichita. Dr. Reed will also assist Dr. Wolf in the development of any undergraduate medical relationships which may involve the Wichita community. He will also develop short-term courses and other postdoctoral programs in medical education, serving the local medical personnel and hospitals.

Current programs in nursing, medical technology and dental hygiene will be incorporated into the new college. New programs to be developed include physical therapy, occupational therapy, medical technology and dietetics and nutrition.

Dr. Reed, a member of the Medical Society of Sedgwick County since 1946, is an alumnus of W.S.U. graduating in 1937, and received his M.D. degree from Washington University, St. Louis, Missouri. He entered general practice in the Wichita community in 1946 and, after a residency program, established his practice in urology in 1955.

Dr. Reed will relinquish his private practice when he accepts the full-time Dean's position April 1.

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Book REVIEWS

SURGERY OF THE ADRENAL GLANDS, by Lawrence W. O'Neal. C. V. Mosby Company, St. Louis, 1968. 295 pages illustrated. \$19.50.

Intended primarily for use by surgeons, *Surgery of the Adrenal Glands* consists of nearly 300 pages of well researched and annotated, nicely illustrated text. Bibliographies are extensive. Data tables from literature as recent as 1968 are included.

Dr. O'Neal introduces the subject conventionally with a chapter on Development and Anatomy of the Adrenal Glands followed by a chapter by Marvin E. Levin, M.D., on the Adrenocortical Hormones: Biosynthesis, Metabolism, Physiologic Control, and Function. Next is a chapter on Adrenomedullary and Sympathetic Nerve Physiology. The succeeding chapter is on Cushing's syndrome. One would prefer that the section on pathology and pathophysiology precede the description of diagnostic tests instead of the reverse, as Dr. O'Neal has done. Emphasis on the help to be derived from study of serial or family album photos is well documented with striking serial photos, and there are also good photographs of cutaneous striae, "buffalo hump," hirsutism, frontal alopecia, and pyoderma. A good flow sheet diagram for investigation, differentiation, and therapy of Cushing's syndrome is presented.

Virilizing and Feminizing States reviews these conditions and discusses diagnosis and treatment. The chapter on primary aldosteronism is clear and understandable and should probably be read by all those treating patients with hypertension. The chapter on Pheochromocytoma is probably the best in the book.

Adrenalectomy for breast cancer is actually discussed (properly) as only part of the therapeutic scheme for advanced mammary cancer, but, surprisingly, other modalities are discussed in some detail, also.

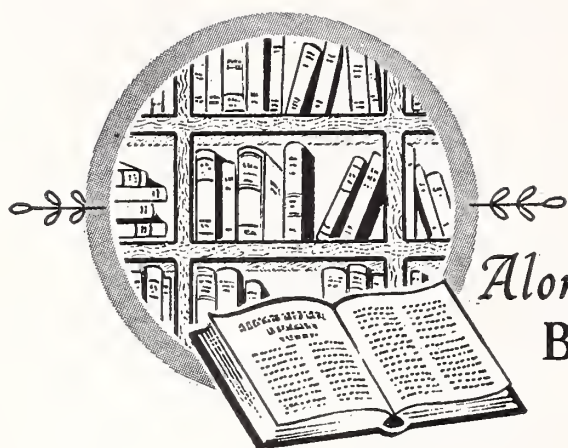
Teresa J. Vietti, M.D. and Carlos A. Perez, M.D. author the chapter on Sympathetic Tumors of the Adrenal and urge an optimistically aggressive ap-

proach to these most frequent malignant tumors of the adrenal in childhood. They discuss radiation and chemotherapy of these tumors as well as surgery, and indicate the frequent need for combined therapy.

The chapter on Roentgenology of the Adrenal Glands by Tom W. Staple, M.D. and William H. McAlister, M.D. provides a good surgeon's-eye view of the available radiologic diagnostic techniques and their limitations and applications, first in general, then applied to specific disease states.

Paul R. Hackett, M.D. and Henry Casson, M.B., Ch.B. discuss Anesthetic Management for Adrenal Surgery, dismissing adrenocortical tumor surgery with one short paragraph and devoting the rest of the chapter to pheochromocytoma. They advise the "physiologic control" method of management of pheochromocytoma patients for surgery while under anesthesia, monitored by arterial and central venous pressure studies. The seeming slight to adrenocortical surgery is cleared, however, when Dr. O'Neal again takes over to write the chapter on Preoperative and Postoperative Management of Adrenocortical Disorders, emphasizing the need for *adequate* replacement therapy. The chapter on operative technique of adrenalectomy is short but understandable; only the abdominal approach is described. Two appendices show normal lab values and interfering substances for hormone determinations.

In general this is a well written, adequately illustrated, well researched and annotated, well produced textbook on the surgical approach to adrenal disease. Appropriate emphasis is on the physiology, anatomy, and pathology. My only criticism is that the text at times has an almost soporific quality for the non-expert in the field. This is not a cookbook type exposition. It must be taken as a whole, as numerous cross-references within the text require some continuity of reading and it requires digestion of the whole to obtain real benefit from its parts. Re-reading was required for full understanding of some parts.—*B.M.P.*



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RECENT ACQUISITIONS

- American College and Neuropsychopharmacology. Neurophysiological and behavioral aspects of psychotropic drugs. Springfield, Ill., 1969.
- Behrens, Charles Frederick. Atomic medicine. 5th ed. Baltimore, Williams & Wilkins, 1969.
- Botsford, Thomas Winston. The acute abdomen. Philadelphia, Saunders, 1969.
- Bourke, Geoffrey Joseph. Interpretation and uses of medical statistics. Oxford, Blackwell, Scientific, 1969.
- Brewer, Earl J. Juvenile rheumatoid arthritis. Philadelphia, Saunders, 1970.
- Brill, Leon. Authority and addiction. 1st ed. Boston, Little, Brown, 1969.
- Community life for the mentally ill; an alternative to institutional care. Chicago, Aldine, 1969.
- Constant, Jules. Bedside cardiology. 1st ed. Boston, Little, Brown, 1969.
- Eastcott, H. H. G. Arterial surgery. Philadelphia, Lippincott, 1969.
- Enselme, Jean. Unsaturated fatty acids in atherosclerosis. 2nd ed. Oxford, New York, Pergamon Press, 1969.
- Gillette, Harriet. Systems of therapy in cerebral palsy. Springfield, Ill., Thomas, 1969.
- Gooch, Alden S. Clues to diagnosis in congenital heart disease. Philadelphia, Davis, 1969.
- Havener, William Henry. Atlas of diagnostic techniques and treatment of intraocular foreign bodies. St. Louis, Mosby, 1969.
- Henry, Hugh F. Fundamentals of radiation protection. New York, Wiley-Inter-Science, 1969.
- Hirsch, Edwin Frederick. The innervation of the lung. Springfield, Ill., Thomas, 1969.
- Hodgson, A. R. X-ray appearances of tuberculosis of the spine. Springfield, Ill., Thomas, 1969.
- Hood, Raleigh Maurice. Management of thoracic injuries. Springfield, Ill., Thomas, 1969.
- Hubble, Douglas. Paediatric endocrinology. Philadelphia, Davis, 1969.
- Kistner, Robert William. The use of progestins in obstetrics and gynecology. Chicago, Year Book, 1969.
- Lamb, Lawrence E. Your heart and how to live with it. New York, Viking Press, 1969.
- Norman, John C. Medicine in the ghetto. New York, Appleton-Century-Crofts, 1969.
- Peltz, Edith M. Bland but grand; a cookbook for people on certain continuing diets. 1st ed. Garden City, N. Y., Doubleday, 1969.
- Peters, Richard M. The mechanical basis of respiration; an approach to respiratory pathophysiology. Boston, Little, Brown, 1969.
- Sapeika, Norman. Food pharmacology. Springfield, Ill., Thomas, 1969.
- Shore, Milton F. Mental health and the community; problems, programs, and strategies. New York Behavioral Publications, 1969.
- Simpson, Keith. Forensic medicine. 6th ed. London, Edward Arnold (Publishers) LTD, 1969.
- Stock, Claudette. Minimal brain dysfunction child: some clinical manifestations, definitions, descriptions and remediation approaches. Boulder, Colorado, Pruett Press, 1969.
- Talland, George Alexander. The pathology of memory. New York. Academic Press, 1969.

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GERALD C. BATES, M.D.

Dr. Gerald Bates, 78, died at his home in Independence on February 6, 1970.

Dr. Bates was born June 8, 1889, at Adrian, Missouri. He received his Doctor of Medicine degree from St. Louis University School of Medicine in 1915. After completing his internship at Kansas City General Hospital, and two years of service during World War I, he returned to Missouri, where he joined his father in medical practice. He moved to Independence in 1926 and practiced medicine there until his retirement in 1965.

Surviving Dr. Bates are his wife and son.

MARSHALL E. CHRISTMANN, M.D.

Dr. Marshall E. Christmann, Pratt, died on March 10, 1970, at the Pratt County Hospital. He was 63 years old.

He was born at Kankakee, Illinois, on March 29, 1906. He graduated from the College of Medical Evangelists at Loma Linda, California, in 1930 and moved to Pratt in 1932, where he was in the practice of general surgery. Dr. Christmann was a Veteran of World War II.

Dr. Christmann is survived by his wife, son and daughter.

VAL CONVERSE, M.D.

Dr. Val Converse, 42, Horton, died in the Horton hospital on February 8, 1970.

Dr. Converse was born in Kansas City, Missouri on March 1, 1927. He was graduated from the University of Kansas School of Medicine in 1955 and served his internship at St. Joseph's Hospital, Kansas City, Missouri. He moved to Horton in 1956. At the time of his death, Dr. Converse was a member of the Council of the Kansas Medical Society, serving as councilor from the First District.

Survivors include his wife, son and daughter.

Contributions may be made to the Dr. Val Converse Memorial Fund, Horton Community Hospital.

LUCIEN R. MCGILL, M.D.

Dr. Lucien R. McGill, Hoisington, died on February 14, 1970, at the age of 85.

Born August 3, 1884, at Hill City, he attended Emporia State Teachers College and the University of Kansas, later transferring to the St. Louis University School of Medicine, receiving his medical degree in 1916. After practicing in Illinois and taking specialized training in radiology in Chicago, he went to Hoisington in 1920 and practiced there until his retirement in 1956.

Surviving Dr. McGill are his wife and son.

Memorials may be made to the Edward Kroesch Scholarship Fund.

NOBLE E. NAYLOR, M.D.

Dr. Noble E. Naylor, 82, Wellsville, died on January 17, 1970, at Research Hospital in Kansas City.

Dr. Naylor was born July 6, 1887, in Platte County, Missouri. After graduation from William Jewell College at Liberty, Missouri, he entered the University Medical College, Kansas City, Missouri, and graduated with a M.D. degree in 1912. He began his medical practice in Centropolis. After serving in the U. S. Army Medical Corps during World War I, he resumed his practice in Ottawa, moving to Wellsville in 1920. He continued his practice there until his recent illness.

He is survived by his three children.

ROSS D. SKINNER, M.D.

Dr. Ross D. Skinner, 46, died February 25, 1970, at his home in Wichita.

He was born August 26, 1923, at Delphos. Dr. Skinner graduated from Kansas State University in 1948 and received his medical degree from the University of Kansas School of Medicine in 1950. He went to Wichita in 1950 as an intern at Wesley Hospital, and later entered general practice in that city. He served in the U. S. Navy during World War II.

Survivors include his wife and daughter.

A memorial has been established with the Little Sioux Indian Nation, Pine Ridge, South Dakota.

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and jitteriness. In contrast, CNS depression has been reported. In a few epileptics an increase in convulsive episodes has been reported. Sympathomimetic cardiovascular effects reported include ones such as tachycardia, precordial pain, arrhythmia, palpitation, and increased blood pressure. One published report described T-wave changes in the ECG of a healthy young male after ingestion of diethylpropion hydrochloride; this was an isolated experience, which has not been reported by others. Allergic phenomena reported include such conditions as rash, urticaria, ecchymosis, and erythema. Gastrointestinal effects such as diarrhea, constipation, nausea, vomiting, and abdominal discomfort have been reported. Specific reports on the hematopoietic system include two each of bone marrow depression, agranulocytosis, and leukopenia. A variety of miscellaneous adverse reactions have been reported by physicians. These include complaints such as dry mouth, headache, dyspnea, menstrual upset, hair loss, muscle pain, decreased libido, dysuria, and polyuria.

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Congestive Heart Failure

Clinical Evaluation of Furosemide in Congestive Heart Failure*

PHILIP VARRIALE, M.D., *Fort Riley,*[†]
JULETTA V. TANG, M.D.,[‡] *and*
FRANK VILLANUEVA, M.D.,[§] *New York City*

FUROSEMIDE has been shown to be effective in patients not responsive to the commonly available diuretics (organomercurials, thiazides and other heterocyclic compounds). A great level and range of effectiveness is achieved by its unique sites of action in the nephron.¹⁻⁷

Furosemide is indicated for the treatment of edema associated with congestive heart failure, cirrhosis of the liver, and renal disease including the nephrotic syndrome. It has been found safe and clinically effective in the treatment of congestive heart failure in varying age groups.²⁻¹⁶ The present study was undertaken to assess the clinical response to furosemide in such patients without prior diuretic therapy or who were refractory to prior diuretic therapy.

Materials and Methods

Twenty patients with moderate to severe congestive heart failure secondary to a variety of cardiac

Furosemide was administered to 20 digitalized patients with congestive heart failure in the Intensive Care Unit of Columbus Hospital, New York, New York. Only three subjects had previously received other diuretics. Statistically significant ($p < 0.05$) reductions occurred in weight, clinical edema, systolic blood pressure, and diastolic blood pressure.

* Supplied as Lasix® by Hoechst Pharmaceutical Company, Cincinnati, Ohio.

† Former Director of Cardiology, Columbus Hospital, New York City, and Clinical Assistant Professor of Medicine, New York University School of Medicine. Dr. Variale is presently Chief of Cardiology, Irwin Army Hospital, Fort Riley, Kansas.

‡ Fellow in Cardiology, Columbus Hospital, New York City.

§ Resident in Medicine, Columbus Hospital, New York City.

disorders were studied. All patients were slowly digitalized and three patients received Pronestyl or intravenous Xylocaine for the treatment of associated cardiac arrhythmias. There were twelve males ranging in age between 43 and 88 years and eight females between 60 and 87 years (*Table 1*). All but four patients were Caucasian.

TABLE 1
CLINICAL RESPONSE TO FUROSEMIDE IN PATIENTS WITH CONGESTIVE HEART FAILURE

Number	Age	Race	Sex	Weight (pounds)		Edema Score		Systolic Blood Pressure (mm. Hg.)		Diastolic Blood Pressure (mm. Hg.)	
				INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
1	43	N	M	278	178	4+	0	180	120	130	80
2	54	W	M	Wt. not recorded		3+	0	120	150	80	80
3	64	W	M	175	159	0*	0	180	140	100	80
4	65	W	M	130	108	4+	0	150	140	120	70
5	60	W	F	107	90	3+	0	100	100	70	70
6	62	W	M	102	97	0*	0	140	140	110	100
7	66	N	F	113	104	2+	0	260	160	170	90
8	80	W	F	Wt. not recorded		0*	0	220	130	95	60
9	63	W	M	Wt. not recorded		0*	0	140	100	90	70
10	75	W	M	200	160	4+	0	180	130	110	60
11	87	W	F	138	127	2+	0	170	142	120	92
12	88	Phil.	M	100	92	1+	0	150	114	90	60
13	76	W	F	85	75	2+	0	160	138	80	74
14	66	N	F	106	98	4+	0	210	140	130	80
15	81	W	M	190	165	4+	0	160	110	100	70
16	70	W	M	155	143	0	0	170	140	100	70
17	75	W	M	220	193	3+	0	132	130	74	80

* "0" initial edema score refers to those patients who presented with exclusive pulmonary congestion and edema without overt evidence of right-sided heart failure.

Patients 18, 19, and 20 presented with pulmonary edema without systemic venous congestion showed good response to furosemide by clearance of pulmonary edema between 2 to 5 days. Weight was not recorded because of etiological heart disease e.g. acute myocardial infarction.

The secondary disorders included delirium tremens, diabetes mellitus, chronic lymphocytic leukemia, Laennec's cirrhosis, chronic bronchitis, chronic pyelonephritis and obstructive uropathy. Fifteen patients were given potassium supplements in the form of oral KCl. The average initial dose of furosemide was 40 mg orally two or three times daily. This was subsequently adjusted to 40 mg per day, usually within four to seven days after the introduction of diuretic therapy. Weight, blood pressures, and the reduction of clinical edema—both systemic and pulmonary—were recorded daily.

Laboratory determinations were carried out at periodic intervals. These included hemoglobin, hematocrit, total white blood cell count with differential count, platelets, serum potassium, blood urea nitrogen, glucose, uric acid, sodium, chlorides, CO₂, albumin, globulin, SGOT, SGPT, LDH, alkaline phosphatase, bilirubin and urinalysis.

Results

Clinical response to furosemide therapy was significant in every patient. Individual values for weight, edema score, and blood pressure are tabulated in Table 1. A reduction in these indices was noted from initial to final readings in most instances.

Only two paired entries (#2 systolic blood pressure and #17 diastolic blood pressure) exhibited an increase from initial to final recording. The heavier patients and those with higher blood pressures experienced a greater reduction in these parameters.

Table 2 summarizes the statistical evaluation of clinical response to furosemide. Statistically signifi-

TABLE 2
STATISTICAL EVALUATION OF CLINICAL
RESPONSE TO FUROSEMIDE IN PATIENTS
WITH CONGESTIVE HEART FAILURE

	Initial		Final		P**
	MEAN	S.D.*	MEAN	S.D.	
Weight (lbs.)	150	±54	128	±37	0.01
Edema score	3	± 1	0	± 0	0.01
Systolic blood pressure (mm. Hg.)	161	±36	130	±17	0.01
Diastolic blood pressure (mm. Hg.)	104	±23	76	±11	0.01

* Standard Deviation.

** Statistical significance of difference of means.

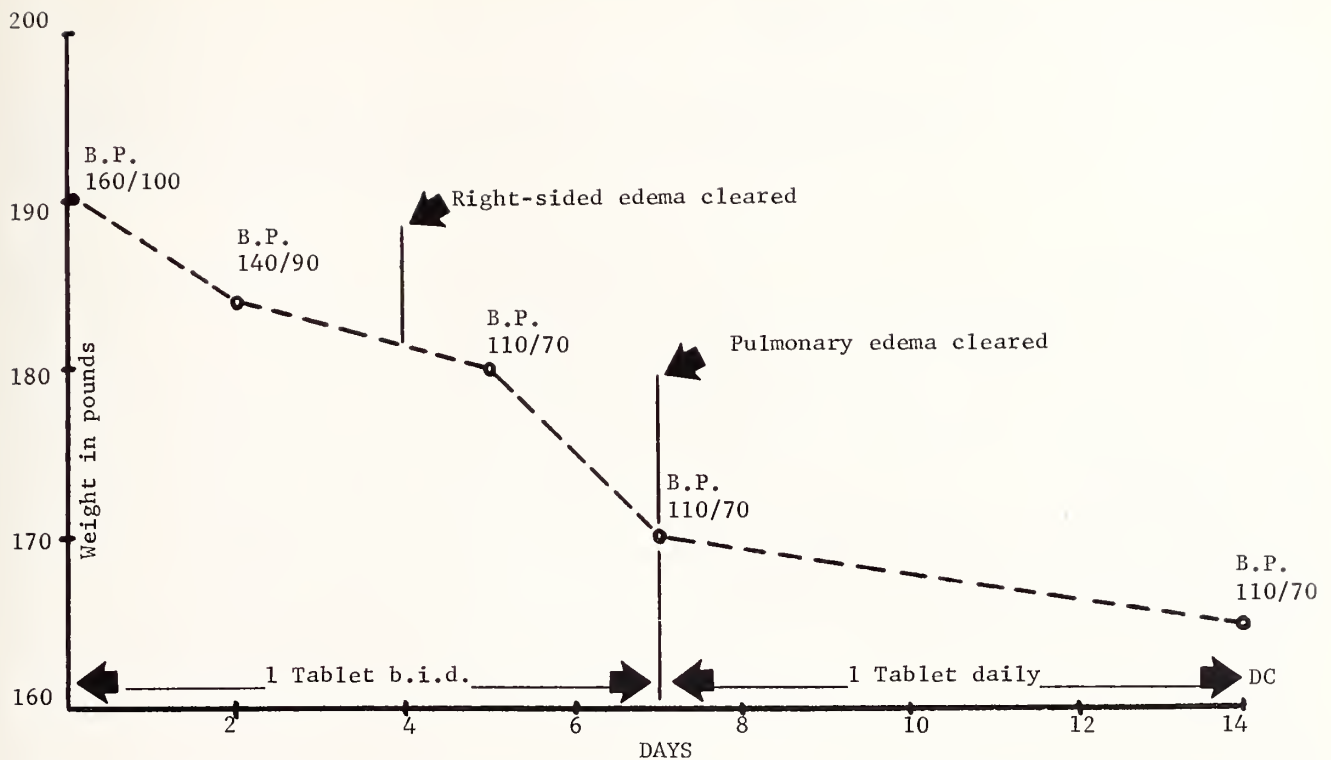


Figure 1. Weight and blood pressure response to furosemide in an 81-year-old white male with congestive heart failure from acute anterior wall myocardial infarction.

cant reductions in weight, edema score, systolic and diastolic blood pressures occurred during the therapeutic trial. Although the group is not large, clinically consistent effects were observed (*Table 1*). This is especially evident in the reduction of spread around the mean (standard deviation) in *Table 2*. Mean reductions of 31 and 28 mm Hg for systolic and diastolic blood pressures, respectively, were noted. The mean weight loss was 22 pounds. A complete remission of clinical edema is reflected in the final score of zero.

Clearance of pulmonary edema required a mean time of 10 ± 7.2 days (16 patients). However, unusually long times were necessary for three patients. These subjects demonstrated a mean time of 24 days. Excluding these, pulmonary edema clearance time was only 6.5 ± 1.5 days.

Side Effects

All our patients exhibited biochemical stability. Occasional transient weakness was noted in two patients. No other side effects from furosemide administration were observed. No hypokalemia was noted in the five patients who did not receive potassium supplement.

Figure 1 (patient #15) illustrates the continued effect of furosemide on body weight after blood pressure stabilization and elimination of clinical edema. On the fourth day, systemic edema was reduced from a score of 4+ to 0. Pulmonary edema cleared in

seven days and blood pressure stabilization at 110/70 occurred on the fifth therapeutic day.

Discussion

The clinical response to furosemide therapy observed in this study is in conformity with published results.²⁻¹⁶ Many of these reports, however, included patients who had previously received other diuretic agents. In this study only three subjects (numbers 2, 3 and 10) were in this category.

Therapeutic effectiveness was demonstrated by the rapidity of pulmonary edema clearance time (6.5 ± 1.5 days) for most of the group (13 patients). It was previously noted that in three subjects (numbers 4, 6 and 12) this required an unusually long time (24 days).

Exceptional tolerance to a broad dosage range and predictable diuresis without biochemical imbalance have been demonstrated in clinical investigations with furosemide.¹⁻¹⁶

The overall absence of clinical and biochemical side effects throughout this study is particularly noteworthy. The results of this investigation confirms the conclusion of other investigators^{14, 17} that furosemide "represents the biggest advance in diuretic therapy since the introduction of chlorothiazide."

References

1. Brest, A. N., Seller, R., Ramirez, O., Onesti, G. and Moyer, J. H.: Comparative diuretic efficacy of furosemide. *J. New Drugs* 5:329-332, 1965.

(Continued on page 201)

Coronary Care Units

Practical Aspects of Coronary Care Units—Development in the Community Hospital

(Editor's note: The following material was presented as a panel discussion of the Coronary Care Committee of the Kansas Heart Association at the annual meeting of the association in Topeka on September 26, 1969. It is printed here since it is of interest to all Kansas physicians and deals with a new phase of patient care, Coronary Care Units, which have proven to save lives of heart attack patients.)

Dr. Donald D. Decker, Halstead, president of the Kansas Heart Association, chaired the panel. Members of the panel were Dr. Dwight Lawson, retiring president, Topeka; Dr. Delmas A. Jackson, Coronary Care Committee Chairman, Salina; and Dr. John Coyle, Coffeyville.)

Introduction

DONALD D. DECKER, M.D., HALSTEAD:

The format of this panel presentation will be as follows: in the first five minutes I will attempt to lay some groundwork, define some terms, and preview the areas which will be discussed in greater detail by the panel members. I have asked each panel member to discuss certain aspects of coronary care units and coronary care training. If there is some repetition in what I say in this introduction and what the panel members present, this will be desirable because the important points need emphasis.

A few sobering statistics should suffice to justify inclusion of this panel discussion in today's program. There are approximately one million heart attacks in the United States each year, and heart attacks kill approximately one-half million people in the United States each year. Since coronary care units are concerned with the care of heart attack patients, it is entirely appropriate that volunteers in the Kansas Heart Association be knowledgeable in this area. It has been estimated that at least 25,000 coronary care unit beds are needed in the United States. I do not know how many coronary care unit beds are needed in Kansas, but I am sure that we need more than we now have. We can point with pride to the fact that the first coronary care unit in the United States was established by a Kansan, Dr. Hughes Day at Bethany Hospital in Kansas City, Kansas.

Before proceeding further, it would be well to define a few terms that we will be using, for the non-physician and non-nursing delegates who are here today. [At this time, Dr. Decker explained some

pertinent medical terms for the non-medical audience. This is omitted in this publication, since readers are physicians.—Editor.]

Heart attacks cause death by several different mechanisms, the two major categories being: (1) power failure, and (2) arrhythmias, and Dr. Jackson will have more to say on this. It is important to define the term arrhythmia, because the purpose of a coronary care unit is to continuously monitor the heart rhythm of the patient with a heart attack and sound an alarm when an abnormal rhythm, or arrhythmia, occurs. An arrhythmia is merely an abnormality or irregularity in the rhythm of the heart. This might be an abnormally slow heart rate, or an abnormally rapid heart rate. Now, some arrhythmias are not very serious. Other arrhythmias, such as ventricular fibrillation and cardiac arrest, result in death if not promptly treated. It is the prevention, detection, and treatment of serious arrhythmias which have been responsible for the reduction of mortality in heart attack patients cared for in coronary care units.

In June of this year, I had the pleasure of attending the Second National Conference on Coronary Care Units in Denver, which was jointly sponsored by our parent organization, the American Heart Association, along with the American College of Cardiology and the U. S. Public Health Service. At this conference, the statement was made that "a person who suffers a heart attack and who is taken to a hospital which lacks a coronary care unit has no better chance for survival today than such a person so stricken 30 years ago." Now, I do not want to be quoted as making this statement; I am merely quoting someone else who made it. But, the statement is appropriate because mortality due to pump failure has not been improved very much by any form of treatment now available. However, deaths due to arrhythmias are drastically reduced if the patient is monitored in a coronary care unit so that the arrhythmia is immediately detected, diagnosed and treated with medication or electric shock. Thus, the need for more coronary care units is obvious.

This leads us to one of the biggest stumbling blocks to the establishment of a coronary care unit in a community hospital. Continuous electrocardiographic monitoring requires the 24-hour presence of

a nurse who is especially trained in EKG monitoring and in the interpretation and treatment of arrhythmias. Therefore, the initial training of these nurse specialists is a major consideration. The availability of coronary care nurses is likely to be the most serious limiting factor to the establishment and maintenance of a coronary care unit in a community hospital. This is especially true in a small town, but it is also a problem in the cities. Once the nurse is trained, there is the problem of having a continuing education program to keep the coronary care nurse proficient, and there must be a continuing supply of new coronary care unit nurses to replace the turnover of those who move to another community, or are lost due to marriage, pregnancy, or whatever cause. At the National Conference on Coronary Care Units it was stated that the average coronary care unit nurse works for only nine months. Of course, many of them work for many years, but enough of them have only a few months of employment so that the average is this incredibly low figure of nine months. Dr. Coyle will have more to say on this subject in his discussion, I am sure.

Panel Discussion

DELMAS A. JACKSON, M.D., SALINA:

It is very important before opening a coronary care unit that plans be made for training physicians and nurses in the proper operation of the unit, including the training of nurses to run it. It is necessary to have a continuing course in basic electrocardiography, with particular attention to detection of arrhythmias.

It is also very important that careful study be done in determining the monitoring equipment that the hospital should buy. It should definitely be stressed that the company selling the equipment should provide service on a 24-hour basis. In many places equipment far beyond the needs of the hospital has been secured, often at a great expense, or at a greater expense than is necessary.

Two hospitals in Salina have coronary care units, and experience over the past two and a half to three years has shown variable results. In one hospital, the death from myocardial infarction prior to coronary care unit was 35 per cent. Following the beginning of operation of the coronary care unit, the hospital mortality rate from acute myocardial infarction dropped to 14 per cent. In another hospital of similar size, the mortality rate prior to the unit was 36 per cent. After opening the coronary care unit, the mortality rate over a one-year period was 34 per cent. These figures are discouraging, but it may be that after the latter unit is in operation longer, these values will correct themselves.

JOHN F. COYLE, M.D., COFFEYVILLE:

We opened our coronary care unit at Coffeyville Memorial Hospital on May 7, 1968, and closed it March 3, 1969. During that time, 114 patients were admitted to the unit. The coronary care unit was considered a factor in the recovery of patients as follows:

	<i>No. of Patients Per Cent</i>	
Major	38	33
Minor	49	43
No factor	8	7
Died	19	17

Prior to establishment of the coronary care unit, our mortality rate due to myocardial infarction had been a steady 30 to 31 per cent yearly. I feel that a reduction of this death rate to 17 per cent is a real accomplishment and is due almost entirely to prevention of death by electrical failure and arrhythmia. I feel the value of the coronary care unit has been well established.

A lesson to be learned from our experience is that this system of intensive nursing care is quite valuable, but depends entirely upon adequate resources in terms of personnel. We had to close our unit not because of ineffectiveness, but because of loss of personnel. Pregnancy, illness, husbands changing positions because of job opportunities in other communities and taking their nurse-wives with them, reduced the ranks of the coronary care unit nurses to the point that we could no longer operate.

Nurses are in short supply in our entire area and as of this date we have not been able to replace those lost from our coronary care unit. Hopefully, we shall be able to recruit registered nurses who can be trained or are already trained so that we may once again open our unit.

I think the message in my remarks is that once again it is pointed out that the coronary care unit is entirely dependent upon the personnel available to operate it, both in terms of physician and nurses. It behooves every community thinking of opening a unit to examine thoroughly their source of supply in terms of these personnel and to be sure that an adequate supply of coronary care nurses is at hand or can be obtained.

DWIGHT LAWSON, M.D., TOPEKA:

The Kansas Heart Association endorses and encourages the use of any modality or facility which is life-saving; and, consequently, definitely encourages and supports the development of coronary care units in hospitals throughout the state. Blue Cross-Blue Shield inspects hospitals for compliance and certification of payment and maintains a check list of

equipment and minimum nursing requirements. These have been adopted as also fulfilling requirements of the Kansas Heart Association.

During the past year, your association distributed 50 copies of the U. S. Department of Health, Education, and Welfare Public Health Service Publication, "Guidelines for Coronary Care Units" to hospitals of Kansas that had intensive care or coronary care facilities.

Since the first of the year, 30 additional hospitals in Kansas have requested and have been supplied with specialized information on equipment and operation of coronary care or intensive care units. Certain selected, skilled physicians have given their services as consultants to physicians and hospitals contemplating the establishment of coronary care units.

The Coronary Care subcommittee of the Professional Education committee of the Kansas Heart Association held a meeting in Salina April 19, 1969, and made the following recommendations:

1. The "Guidelines for Coronary Care Units" published by the Public Health Service of the U. S. Department of Health, Education, and Welfare in July 1968, and the new edition of the same, should be the guide for the establishment of coronary care units and for their operation in Kansas.

2. The committee also recommended that a logical sequence for any physician or hospital to follow in the establishment of a coronary care unit should be:

- a. The establishment of the professional requirements. These include, Who is going to take the responsibility to run the unit? Who is the leader? What people can be trained to operate the unit from the personnel resources already on hand?

- b. Set up the training program and train nurses and ancillary personnel by attendance at the Regional Medical Program Coronary Care Unit training courses. These are available either at the University of Kansas Medical Center or at Wesley Hospital in Wichita, or if attendance at these facilities is impossible, on-the-job training at the home hospital should be given under the physician's supervision.

- c. Obtain the equipment only after sufficient personnel have been trained in its use and operation. Also take into account the availability of local adequate maintenance and repair personnel for the equipment as this is most important in keeping the life-saving equipment in the unit operating.

- d. Blue Cross-Blue Shield requirements for certification were believed adequate and sufficient to satisfy those of the Kansas Heart Association, Inc.

- e. The Coronary Care subcommittee agreed that the coronary care unit is a prestige unit and a prestige assignment for personnel of the unit is necessary to maintain the unit efficiently and effectively.

3. A policy statement was prepared and agreed to as the Kansas Heart Association's policy on coronary care units.

4. The committee recommended that two Tutor 202 tape training devices be obtained for the use of physicians and hospitals in Kansas to train coronary care unit personnel. One has been obtained and is in use in hospitals in the state to train personnel in the recognition of cardiac arrhythmias from actual patient tracings moving across an oscilloscope screen, with simultaneous voice description of the arrhythmias given by qualified teaching cardiologists. The tapes used on this training device allow the student to see and compare normal and abnormal patterns on the scope, just as they learn to recognize danger signals on the scope as they will appear in actual patient-monitoring. Because of new improvements in the Tutor 202 device, it was thought best to wait until later in the year before purchasing the second unit.

5. Also, the Tampa Tracings, a set of 50 slides (35 mm) for the training of coronary care unit nurses has been obtained and made available to nurses and physicians. Slides 1 through 24 of this set give trainees a basic understanding of the electrocardiogram; slides 25 through 39 give information on arrhythmias and are for more detailed classroom teaching, and slides 40 through 50 are used by the instructor for testing and practicing the students. Hospitals in the state may request these slides for use in training programs. They contain descriptions of all common and important danger signals that an alert nurse should be able to recognize in the electrocardiogram.

6. Cardiopulmonary resuscitation demonstrations and practice sessions with manikins and films were given for 3,106 persons during the past fiscal year. About one fourth of these people were practicing nurses who worked at least some of the time in coronary care or intensive care units of hospitals in the state.

7. The films, "Introduction to Nursing in a Coronary Care Unit" and "Disorders of the Heart Beat" received wide distribution to hospitals in the state for in-service training. The discussion guides for the former film were also widely used.

8. The new booklet from the American Heart Association entitled, "Inside the Coronary Care Unit, a Guide for the Patient and His Family," was sent to each hospital in the state having a coronary care unit. This is an excellent booklet designed for the

patient and his family. It explains the operation of the unit clearly and concisely for them. Orders from the hospitals receiving the sample copy have been considerable and are being filled as rapidly as the booklets arrive from New York.

9. The coordinator of the Kansas Regional Medical Program, Dr. Robert M. Brown, Kansas City, has been kept informed of the coronary care committee's recommendations and meetings.

We look forward to much more activity by the committee and the association staff in assisting other hospitals in Kansas to establish and properly operate these life-saving coronary care units. Some hospitals may only have one bed with proper monitoring equipment; larger hospitals may have many more, but the idea is sound and is saving the lives of many heart attack patients. We must help all we can to get more units for Kansas.

Policy Statement on Coronary Care Units

The Coronary Care committee of the Kansas Heart Association recommends that recognition be given to the fact that training of personnel in coronary care unit operation around the clock is of paramount importance; that physician training is the primary step, followed by proper training of nurses and ancillary personnel, either at a Kansas Regional Medical Program training center or by local, properly supervised on-the-job training with the Kansas Heart Association assisting by making available to physicians training devices for teaching those persons who have already completed the basic KRMP or on-the-job instruction. The committee further recommends that no coronary care equipment be purchased until the physicians' and nurses' training is in progress or has been completed.

It is also recommended that at the time equipment is purchased or ordered, a determination be made as to the ready availability of trained maintenance personnel and service facilities for the coronary care unit equipment, and that this availability should be one of the big considerations before purchase of any such equipment. Also, the Kansas Heart Association personnel will be happy to provide a consultation service and offer suggestions based on past experience in such matters to any group requesting such services.

Summary

DONALD D. DECKER, M.D.:

The panel has presented some of the practical aspects regarding establishment and operation of a coronary care unit. If you are interested in establishing a coronary care unit in your community, the following suggestions might be of help:

1. Obtain a copy of the booklet "Guidelines for Coronary Care Units."

2. Make a survey of nurse availability in the community and start a coronary care unit training course for the nurses.

3. Utilizing heart attack statistics in your community make a survey of how many coronary care unit beds are needed.

4. Obtain an estimate of the price of monitoring equipment for this number of beds.

5. Purchase the equipment from a company which can provide around-the-clock servicing of the equipment.

6. Establish guidelines for the admission of patients to the unit, especially emphasizing the importance of early admission.

7. Be sure your coronary care unit nurse is given authority to treat arrhythmias promptly and that she has standing orders for certain anti-arrhythmic medications.

8. Be sure that your coronary care unit nurse is given authority to defibrillate electrically in the event of occurrence of ventricular fibrillation.

9. Establish some kind of a continuing education program for the coronary care unit nurse.

10. Institute some kind of public education program in your community, emphasizing the importance of early admission to the coronary care unit in the event of heart attack.

Hopefully, some of this information will be of value to you in establishing coronary care units in your communities.

Question & Answer Session

A question and answer session for those attending was held for approximately 20 minutes with the panel members answering questions which fell within their presentation guidelines. Of particular interest were the questions from the floor regarding the lack of trained personnel to operate the coronary care units, particularly from nurses who are engaged in training registered nurses and practical nurses who were attending the meeting. Also expressing an opinion was the Director of Continuing Education of K.U.M.C., Dr. Jesse Rising, who agreed that this area was one of the most important in establishing a coronary care unit.

I have personally observed the mutual benefits that derive from hiring the handicapped—the physically impaired, the mentally retarded, the mentally restored—and I want this "good business" to continue and prosper. . . . Richard Nixon, President.

Benign Lentigo of the Face

Treatment With a Diamond Abrader: A Case Report

LOWELL W. WILDER, M.D.,* *Wichita, and*
BYRON SMITH, M.D.,† *New York City*

BENIGN LENTIGO¹ is a skin lesion which commonly affects the dorsa of the hands, the forearms, and the face of the elderly. It presents as a slowly enlarging brown spot and morphologically resembles a junctional nevus. When removal is indicated, electro-desiccation and curettage or simple excision is usually employed. This case report demonstrates the effective use of the diamond abrader² in the treatment of a large benign lentigo of the face.

E.D., a 76-year-old white female, noted four years earlier several small brown spots on her right cheek

just below the eye. From the onset, these spots slowly multiplied, enlarged, and many coalesced to form

This is a case report of a large benign lentigo of the face effectively removed with an air driven diamond abrader.

larger patches. Preoperatively (*Figure 1*) she presented with a 3.5 x 3.5 cm lesion on the right cheek extending superiorly onto the lower eyelid. This lesion was a confluence of small, irregular, roughened patches which varied in color from light to dark brown.

(Continued on page 201)

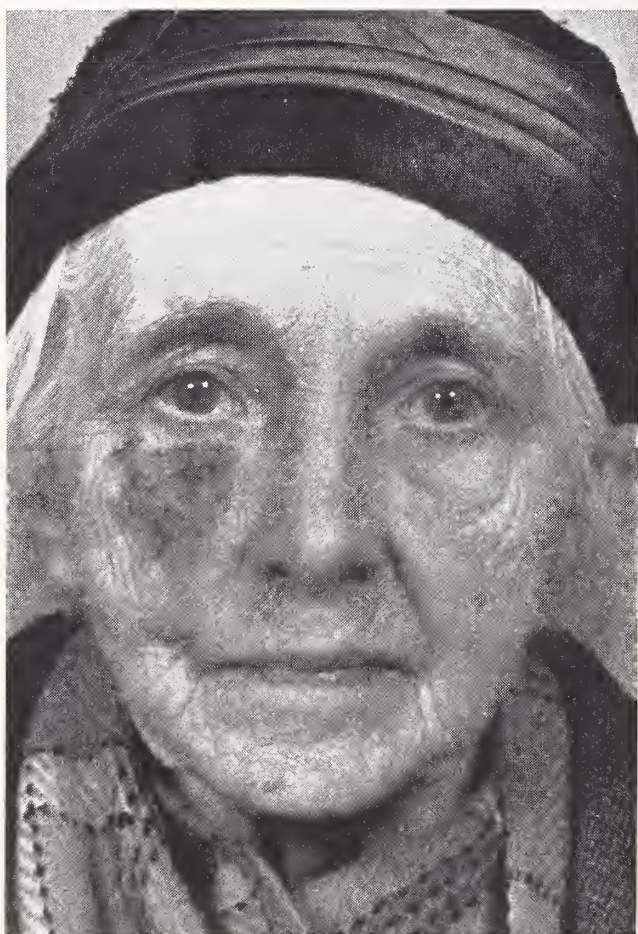
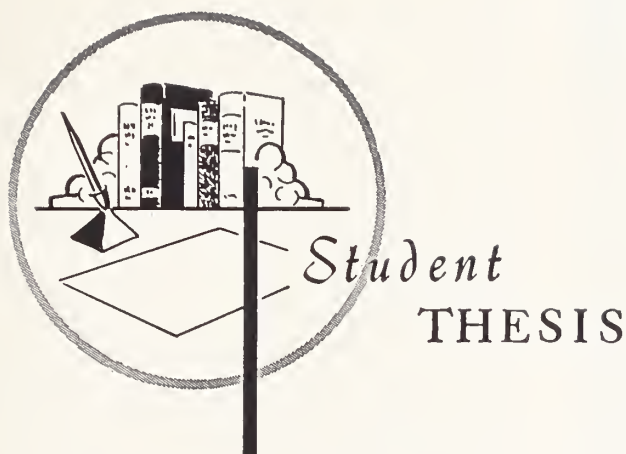


Figure 1. Benign lentigo before dermabrasion.



Figure 2. Three weeks after dermabrasion of benign lentigo.



The Brown Spider Bite

MERLE BOLTON, M.D.,* *Kansas City, Kansas*

IT HAS BEEN known for only twelve years that the bite of the brown recluse spider, *Loxosceles reclusus*, may produce local cutaneous necrosis, and systemic toxicity which on rare occasion leads to death. North American Loxoscelism represents a particularly significant medical problem in the midwestern states of Kansas, Arkansas, and Missouri. A documented experience with Loxoscelism at the University of Kansas Medical Center will be reported in this paper which will also include a review of the literature concerning the brown spider and its bite.

History

In 1937, Machiavello described necrotic cutaneous reactions occurring in Chileans following the bite of the spider *Loxosceles laeta*. "Gangrenous spot" has been well known in South America for three decades. In 1940, blackwater fever occurring in a three-year-old Mississippi girl who was bitten by a "large brown spider" was reported by Gotten and McGowan. However, it was not until 1957 that *Loxosceles reclusus* was initially connected with a necrotic spider bite in this country by Atkins and his associates. Hemolytic anemia occurring secondary to the bite of the brown recluse spider was documented by Nance in 1961, and numerous cases of Loxoscelism of all degrees of severity have been reported in the American medical literature over the past seven years.

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Bolton is serving his internship at University of Kansas Medical Center, Kansas City, Kansas.

Entomology of *Loxosceles Reclusus*

The genus *Loxosceles*, family *Loxoscelidae*, is widely distributed throughout the United States. The brown recluse spider is found predominantly in Missouri, Kansas, Arkansas, and Oklahoma, but is also found throughout the South and clinical cases of Loxoscelism have been reported recently as far west as California.

The brown recluse spider was first described by Gertsch and Mulaik of the American Museum of Natural History. The spider is of medium size, the body being 10-15 mm in length, with the females being slightly larger than the males. Despite its name, the spider may vary in color from yellow to dark brown. The carapace is flattened with six eyes (most spiders have eight) arranged in a curved row on the anterior portion of the cephalothorax. There are four long legs on each side of the cephalothorax and the body is said to be covered with microscopic hairs. The spider is somewhat plain in appearance but can be best identified by the dark band, shaped like a violin, which extends dorsally, from the eyes to the end of the cephalothorax. This marking is said to be species specific. Many of the reported bite cases have occurred indoors, but evidence indicates that the natural habitat of the spider is in grass, weed shelters and rocky bluffs.

Typical Clinical Manifestations of the Brown Spider Bite

Though the clinical spectrum of Loxoscelism is quite varied, it is possible to make certain generalizations concerning the symptomatology and clinical course that result following a brown spider bite.

Initially, there may be a mild stinging sensation at the time of the bite, but the patient, upon questioning, may not even recall being bitten, and the spider is seldom seen or available for precise identification. During the first eight hours following the bite, local pain may become moderate to severe. After 12 to 18 hours a thin-topped bleb often forms at the site of the bite, and this is usually accompanied by a surrounding zone of erythema and edema. The bleb soon ruptures and a thin crust takes its place. Over a two to three day course the erythema is replaced by a violaceous discoloration of the skin and after five to seven days the area of the bite progresses to aseptic necrosis, dry gangrenous slough and black eschar formation. The margins of the eschar often separate early and an open ulcer may form after the eschar is lost. In the untreated cases, healing of these cutaneous ulcers may be dreadfully slow with scars persisting for months or years.

During the initial 36 hours following envenomation, a scarlatiniform rash may appear over the trunk and this may be accompanied by signs of systemic toxicity including fever, chills, malaise, nausea, vomiting, and arthralgia. Particularly in young children, hemolysis of varying degree may occur during the first several days following the bite. In very serious cases, massive intravascular hemolysis, hemoglobinuria and death may follow. Pertinent laboratory data may reveal hemolytic anemia, thrombocytopenia, hemoglobinemia, hemoglobinuria and proteinuria.

Case Report

This four-year-old girl was well until the afternoon of January 8, 1968, when she suddenly began to complain of back pain. Although skin lesions were not observed at the time of the initial complaint, four hours later two "red, swollen, blotchy" areas over the child's back and neck were noted by the parents. That evening the child developed lethargy, her temperature was 104 F, and she was vomiting. She was seen by her local physician who prescribed Atarax®. The patient continued to vomit and was restless, agitated, and febrile the next day. In the early afternoon of January 9, she passed dark red-to-black urine. She was seen by another physician and a blood count taken at that time was low. The young girl rapidly developed jaundice, her urine remained black, and the skin lesions on her back were increasing in size and becoming very painful. She was anorexic and continued vomiting intermittently. She was transferred to the University of Kansas Medical Center on January 10. There was no documented history of spider bite, exposure to toxins, trauma or

recent illness. Past medical history was unremarkable.

Physical examination upon admission revealed a lethargic female child who was acutely ill. Her blood pressure was 90 mm Hg; pulse, 120; respirations, 30 per minute; and rectal temperature, 39.8 C. The skin was slightly jaundiced and two skin lesions were noted; one was a 10 cm x 6 cm brown violaceous area over the neck and scapular region and the second was an area of ecchymotic discoloration 4 cm x 6 cm over the right posterior flank region (*Figure 1*). There was moderate scleral icterus and the liver was thought to be minimally enlarged. The remainder of the physical examination was essentially unremarkable.

Initial laboratory investigations on January 10 revealed the hemoglobin was 4.8 gm per cent, hematocrit 13 per cent, WBC 31,500 with 65 segmented neutrophils, and 10 bands; 146,000 platelets and 1.8 per cent reticulocytes. On the peripheral smear toxic granulations and rare Howell-Jolly bodies were noted in addition to many spherocytes. Initial urinalysis showed a pH of 6.0, sp. gr. 1.015, reducing substance negative, protein unable to read because of the grossly hemolyzed blood, and a large amount of hemoglobin in the urine. BUN was 77 mg per cent and creatinine was 2.4 mg per cent. Serum sodium was 131 mEq per liter; potassium, 5.5; chlo-



Figure 1

ride, 98; and CO_2 , 15 mEq per liter. On January 11 the platelets decreased to 50,000 per cubic millimeter. Initial liver function tests revealed a total bilirubin of 5.2 mg per cent, alkaline phosphatase of 3.6 B.L. units and an SGOT of 440 units. A direct Coombs' test was negative. Total serum protein was 8.1 gm per cent with 4.8 gm per cent albumin and 3.3 gm per cent globulin. Fibrinogen screen and partial thromboplastin time were not abnormal. Plasma hemoglobin was 420 mg per cent. On January 11 the plasma hemoglobin was 90 mg per cent and on January 12 it was 20 mg per cent. Urine culture, stool culture, nose and throat culture and CSF culture were all unremarkable.

After the child was admitted to the hospital, she was thought to be in impending shock, and did have gross hemoglobinuria and fever. A central venous catheter was inserted by way of venous cut-down and she was given one pint of whole blood and one unit of packed cells. Plastic surgeons were consulted and it was their opinion that in view of the serious hematologic complications no immediate therapy was advisable for her skin lesions. She was placed on a cooling blanket to help control a temperature of 104 F. Immediately upon admission, she was given Solu-Cortef®, 100 mg intravenously by push, and then 50 mg by volutrol every six hours. On January 14, she was given Prednisone, 15 mg orally every six hours. The corticosteroid medication was tapered gradually over the next several days. She was given maintenance fluids, plus enough to insure urine flow in excess of 40 cc per hour. Prophylactically, in view of steroid therapy and impending skin necrosis, Ampicillin, 500 mg intravenously every six hours was given for four days, and subsequently followed by oral Ampicillin. The child was fairly stable on this regimen and continued to maintain adequate urine output.

During the initial day of hospitalization the skin lesions became more purpuric and somewhat larger. The day following admission, the child was doing reasonably well, was alert, and not irritable, but the skin lesions were becoming more delineated with blotchy ecchymotic centers and erythematous margins (Figure 2).

On January 11 the hemoglobin was 15.9 gm per cent; hematocrit, 52 per cent; the urine still contained a large amount of hemoglobin and showed 2+ proteinuria; BUN was 51 mg per cent and creatinine was 1.5 mg per cent. The plasma hemoglobin fell progressively. The child continued to do well and on January 18 the urine contained a moderate amount of hemoglobin and a faint trace of protein; the BUN was 27 mg per cent and the creatinine was 1.0 mg per cent. She was discharged on January 18 on 20 mg Prednisone orally each day, and because the skin



Figure 2

lesions had improved so greatly, nothing was done surgically for the cutaneous problem.

The child was followed as an outpatient for several visits. On January 26, 1968, the child was doing well. The skin lesions on the back were said to be itching. However, an eschar had developed over the skin lesion on the flank. The urine at this time still contained a small amount of hemoglobin. The Prednisone was reduced to 5 mg orally three times a day and then gradually tapered through February 2, 1968. The skin lesions healed quite slowly; during March they became red, and local drainage from the small ulcers was accompanied by fever. This problem resolved with a short course of intramuscular penicillin. At last report in April, the little girl was doing well with only mild scarring in the region of the two previous lesions.

Pathology

The most detailed description of the pathological changes occurring in experimental animals following the bite of the brown spider has perhaps been given by Atkins, Wingo, Sodeman, and Flynn. Using guinea pigs which were bitten by *L. reclusus*, various pathologic observations were made. In guinea pigs sacrificed two hours after the bite, they noted hemorrhage from the dermis down to the superficial mus-

cle layer, and microscopically, capillaries were dilated and engorged with red blood cells. In an animal sacrificed 24 hours following a bite they noted extensive necrosis of the epidermis with heavy leukocytic infiltration into the zone of hemorrhage. In a guinea pig sacrificed three days following the bite, the skin was ulcerated where the necrotic tissue sloughed and they reported microscopically "a zone of coagulation necrosis extending into the subcutaneous fat." In a final animal sacrificed thirteen days after the bite, an abscess, which had extended down to the muscularis level, had ruptured up to the surface and was beginning, microscopically, to be filled in with scar tissue.

In human cases of necrotic spider bite, a very good pathological description was given by Lessenden and Zimmer. Eighteen hours following a bite, the major change occurring microscopically was thickening of the endothelial lining within small blood vessels. At longer intervals, following a bite, the epidermis at the edge of the ulcer became thickened after eschar formation. The granulation tissue surrounding the ulcer blended gradually into an area of edema and fat necrosis. Also microscopically, perivascular infiltration was noted, along with "sludged blood" filling the small blood vessels.

Hematologic Problems Following the Brown Spider Bite

In rare instances, massive intravascular hemolysis with resultant hemolytic anemia, hemoglobinemia, and hemoglobinuria may occur within the first several days following the bite of the brown spider. This may be accompanied by thrombocytopenia and leukocytosis. An example of severe hematologic manifestations is reported in this paper.

Some very interesting in vivo and in vitro studies concerning the hemotoxic effect of *Loxosceles reclusus* venom have been performed by Denny, Dillaha, and Morgan. Nine mongrel dogs were injected intravenously with extracts of macerated brown spider cephalothoraces and it was noted that the platelet count was depressed only six hours following the injection, and that this depression was at its peak at about 36 hours. They also noted that reticulocytes fell to very low levels just two hours following injection. In these animals moderate hemolysis was also noted. Jaundice and bleeding problems developed in two dogs within 24 hours following injection. However, all "dogs returned to apparently normal state of health 72 to 120 hours post injection, and no residual effect on the hematopoietic system was noted." In a second set of experiments these investigators used "pure" venom obtained in capillary tubes directly from spiders following electrical stimulation, and injected this material intravenously

into four dogs. Again, severe hematologic and clinical toxicity developed and two dogs died within 30 hours. Petechial and ecchymotic areas were demonstrated on the peritoneal surfaces of these animals at autopsy. "Lyophilized" venom was injected into two dogs and once again the hemolysis and thrombocytopenia occurred, although these animals survived.

Using a lyophilized source of venom, these same investigators were able to study the hemolytic effects of the venom in vitro against human erythrocytes. They demonstrated direct hemolytic action of the venom against human red blood cells and they observed that complement inactivation, by heating the serum at 56 C for ten minutes, had no effect on the hemolytic action of the venom. They did note that heating the venom to 56 C inhibited hemolysis by about 50 per cent, and heating it to 100 degrees C completely blocked hemolysis. Therefore, they concluded that these experiments demonstrated a heat-labile, hemolytic toxin which was independent of complement. These experimental data, both in vivo and in vitro, give good confirmatory evidence of the hemotoxic effect of venom from the brown spider. The exact mechanism of the intravascular hemolysis observed clinically in severe form in a few children has not been thoroughly elucidated.

Treatment of the Brown Spider Bite

Therapy of the brown spider bite, at the present time, is largely supportive and somewhat empirical in nature. There is an antivenin prepared against the South American spider, *Loxosceles laeta*, which is used in the treatment of both the cutaneous lesions and systemic manifestations of that spider's toxin. However, this antivenin is not available at present in this country, where to my knowledge it has been used at least once without success against the *Loxosceles reclusus*.

In the literature, numerous therapeutic agents have been suggested, including systemic corticosteroids, local infiltration of corticosteroids around the spider bite, injectable antihistamines, and systemic phenolamine. Fardon, Wingo, Robinson, and Masters have tried all of these agents experimentally in the treatment of rabbits after brown spider bite and concluded that none of these modes of therapy significantly altered the course of the progressive cutaneous necrosis when compared to controls. Based upon this experimental evidence, they advised total excision of involved tissue with primary closure and possible subsequent grafting to aid in the prevention of the necrosis seen clinically. Very good results were obtained in selected patients to support this approach. On the other hand, according to Dillaha and his group the best answer to the problem is the immediate administration of very large

doses of corticosteroids, because such treatment may abort the cutaneous necrosis as well as the systemic toxicity which follows the bite of the brown spider. This group reported 16 cases, and in the six patients who did not receive steroids, all developed local necrosis. Ten patients were treated with systemic corticosteroids in varying amounts and at varying times. Five developed local necrosis and five did not. They feel that failure in the five instances was related to inadequate therapy with corticosteroids; a matter of "too little, too late." These investigators recommend "80 mg methyl prednisolone intramuscularly, immediately; followed by one or two additional doses of same amount at 24 to 48 hour intervals. Subsequently, stepwise decrease to 40, 20, 10 mg every 24 to 48 hours depending on the patient's response is carried out."

I feel that the vigorous, prompt administration of corticosteroids probably saved the life of the little girl reported in this paper, and it did seem to abort the severe cutaneous necrosis so often seen.

Summary

In this paper I have attempted to consider, in some detail, the brown spider and its bite. A representative clinical case was reported, along with a review of the pertinent experimental and clinical literature. The bite of the brown spider will continue to represent a significant medical problem in Kansas and throughout the middle west. Successful therapy and prevention of local necrosis and severe systemic toxicity is primarily dependent upon the physician recognizing this clinical entity early in its course, and then instituting appropriate, vigorous therapy.

Editor's Note: References may be obtained by writing the JOURNAL, 1300 Topeka Avenue, Topeka, Kansas 66612.

Congestive Heart Failure

(Continued from page 191)

2. Hutcheon, D. E., Mehta, D. and Romano, A.: Diuretic action of furosemide. *Arch. Int. Med.* 115:542-546, 1965.
3. Stokes, W. and Nunn, L. C. A.: A new effective diuretic—Lasix®. *Brit. Med. J.* 2:910-914, 1964.
4. Stewart, J. H. and Edwards, K. D. G.: Clinical comparison of furosemide with bendrofluazide, mersalyl, and ethacrynic acid. *Brit. Med. J.* 2:1277-1281, 1965.
5. Verel, D., Stentiford, N. H., Rahman, F. and Saynor, R.: A clinical trial of furosemide. *Lancet* 2:1088-1089, 1964.
6. Stason, W. B., Cannon, P. J., Heinemann, H. D. and Laragh, J. H.: Furosemide: A clinical evaluation of its diuretic action. *Circulation* 34:910-920, 1966.
7. Muth, R. G.: Diuretic properties of furosemide in renal disease. *Ann. Int. Med.* 69:249-261, 1968.
8. Peltola, P.: Furosemide (Lasix®) as a diuretic. *Acta Med. Scand.* 177:777-782, 1965.
9. Kleinfelder, H.: Experimental investigations and clinical trials of furosemide, a new diuretic. *German Med. Monthly* 8:459-465, 1963.

10. Bencomo, L., Fyvolent, J., Kahana, L. and Kahana, S.: Clinical experience with a new diuretic, furosemide. *Curr. Ther. Res.* 7:339-345, 1965.

11. Godwin, T. F. and Gunton, R. W.: Clinical trial of a new diuretic, furosemide: Comparison with hydrochlorothiazide and mercaptomerin. *Canad. Med. Assn. J.* 93:1296-1300, 1965.

12. Keyes, M. H. and Belle, M. S.: Long-term maintenance therapy with a new diuretic, furosemide. *J. Fla. Med. Assoc.* 55:524-530, 1968.

13. King, J. C.: Clinical evaluation of furosemide. *Med. Times* 95:772-775, 1967.

14. Atkins, L. L.: Furosemide in the treatment of geriatric patients. *Geriatrics* 21:143-149, 1966.

15. McFarland, M. D.: A clinical trial of furosemide in patients with congestive heart failure. *Missouri Med.* 65:655-659, 1968.

16. Davidov, M., Kakaviatos, N. and Finnerty, F. A., Jr.: Intravenous administration of furosemide in heart failure. *J.A.M.A.* 200:824-829, 1967.

17. Kerr, D. N. S. and Robson, A. D.: Current Therapeutics. CCVIII. Furosemide. *Practitioner* 194:694-700, 1965.

Benign Lentigo of Face

(Continued from page 196)

In the operating room, the lesion was infiltrated with 2 per cent Carbocaine. A biopsy was taken from one of the darker areas. With an air driven* diamond abrader,† the lesion was completely removed leaving a smooth oozing surface. A Telfa pad and light pressure dressing was applied. This dressing was removed on the first postoperative day. In three weeks (*Figure 2*), the abraded skin showed only mild erythema. There was no evidence of the original lesion. The pathology showed nests of pigment cells, papillomatosis, and acanthosis in the epidermis. The diagnosis was benign lentigo.

References

1. Montgomery, H.: *Dermatopathology*. Harper & Row, New York, 1967, Vol. 2, p. 1141.
2. Lipshutz, H.: The air drill with diamond abrader; A new, useful adjunct for dermabrasion. *Plast. & Reconstruct. Surg.*, 39:521, 1967.

* Hall Drill, V. Mueller Co., 6600 Touhy St., Chicago, Ill. 60648.

† Diamond Abrader, H. B. Robbins Co., 1407 Cumming Dr., Richmond, Va.

The third edition of the monograph, *Cancer of the Female Genital Tract* by Ralph C. Benson, M.D., is now available for distribution to physicians and medical students. This revised monograph replaces the 1957 edition by Herbert F. Traut (now deceased) and Ralph C. Benson. Copies may be obtained from the American Cancer Society, Kansas Division, Inc., 824 Tyler Street, Topeka 66612.

Cancer Page

Letters of complaint from the lay public regarding a family physician's indifference to doing "Pap" smears are not uncommon to the Kansas Division of the American Cancer Society. Those of us in practice all too often encounter an invasive carcinoma of the cervix in a patient who has been under regular medical attendance.

The evidence of the value of "Pap" smears is indisputable. Since the widespread use of this technique and the proper treatment of carcinoma in situ of the uterine cervix, the incidence of invasive carcinoma in this site has been markedly and regularly reduced. Further, the clinical stage of invasive carcinoma when discovered has tended to be lower. So the skeptics can no longer hide under the rock of not believing in "Pap" smears.

Perhaps some physicians do not do "Pap" smears because they do not know how and are embarrassed to ask for instruction. If this be the case, the following is a simple but satisfactory technique for the procedure.

1. Materials necessary are a vaginal speculum, forceps and cotton balls, tongue blade, cotton tipped applicators, glass slides, fixative. The latter two items will be furnished by the laboratory.
2. Prepare the patient for pelvic examination. Moisten speculum with warm water (lubricants sometimes distort the cells) and insert. If the cervix is covered with discharge, gently cleanse it with cotton balls on an appropriate forceps.
3. Take three specimens:
 - a. With the tongue blade, scrape the ecto-cervix several times and then spread the debris from the end of the tongue blade on one of the slides.
 - b. Take a cotton-tipped applicator and swab material from the endo-cervical canal and spread this on another slide.
 - c. The third slide is used for a specimen from the vaginal pool which may be obtained with a cotton-tipped applicator from the lower blade of the speculum after it is removed.
4. Agree upon a marking system for the three specimens which your pathologist will understand. All slides should be placed in the fixative solution for one-half hour.
5. Fill out the data your pathologist requests.
6. Group I should be repeated annually. Group II should be repeated every six months. Groups III, IV, and V should have cervical conization and D and C.
7. Every woman 20 years of age and over should have an annual examination including "Pap" smears.

Once again a few physicians are dragging behind the educated public and not only are patients suffering because of it, the reputation of all practitioners is damaged. PAP SMEARS ARE NO LONGER OPTIONAL, THEY ARE REQUIRED!

—The Committee for Control of Cancer

The President's Message

DEAR DOCTOR:

I accept the privilege and responsibility of the Presidency of the Kansas Medical Society with much humility and determination.

The responsibility for leadership in our Society is well stated in our constitution—"The object of this Society is to unite the medical profession of the State of Kansas in promoting the science and art of medicine and protecting the health of the citizens of this State." This is a goal well worth striving for. I pledge to do all in my power to provide the best leadership I possibly can to help discharge the President's portion of the above responsibility.

Our Society is a multi-faceted group of individuals and as such must function democratically if it is to provide effective leadership. This means that each individual member also bears part of the responsibility of the achievements or the under-achievements of our Society. A plan of action has been outlined and goals set, but the work of the commissions, committees and individual members will determine the final result achieved.

My plan of action and goals as well as specific methods of achieving these goals were presented to the Council following the meeting in Wichita. An outline of goals will be presented to the commissions and committees as soon as their organization is completed.

I urge you to join me in making this year a positive, constructive, action-oriented year. The results will depend on our combined ability to cope with the many problems and guide the inevitable changes that continue to take place in the responsibility of providing health care to the people of Kansas.

"Planning without action is futile.
Action without planning is fatal."

Sincerely,



President





Changes in Title XIX

The 1970 Kansas Legislature frequently expressed concern about the Title XIX program. Several members in positions of authority requested the Kansas Medical Society to give them suggestions for ways in which the program may be altered or improved. The legislature appointed a committee to study this problem in the interim between sessions. The Medical Society will cooperate closely with this committee.

The problem at the moment is to obtain from the members of this Society their suggestions. Francis T. Collins, M.D., President, welcomes any ideas that may be submitted in the name of this Society for achieving a greater efficiency in the operation of Title XIX. To assist those willing to explore this question, there follow several factors that will need to be considered.

It appears there will be federal changes. Until enacted by the Congress, what form these changes may take cannot be predicted. However, as they alter the federal law, Kansas participation will be affected. Problems under consideration include higher federal aid for children, which is among the more expensive programs; possible reduction of the age for participation under Medicare, and the creation of a new Part C. This proposal would allow the Medicare recipient to select either care under a clinic system whereby physicians are paid on a capitation basis, or to select physicians that are paid on a fee for service basis. It appears there is a movement toward encouraging closed panel clinic practice.

A second point for consideration is a federal reg-

ulation. Kansas was among the relatively few states that started a complete Title XIX program. Other states are working gradually toward this. States may not cut back on benefits or services for such categories as are federally funded unless three requirements are met. First, there must be evidence of effective utilization review. Second, there may be no reduction in over-all state expenditures. Third, there may be no resulting increase in provider payments that can be contributed to such reductions. The Kansas picture is not altogether a happy one. Basically, physicians' charges remain frozen, but hospital costs continue to rise; utilization review is becoming effective, but the case load increases and apparently will continue to do so.

Either the cost of the Title XIX program will continue to rise, or providers will be paid at lower rates, or some adjustment in the program must be found. Higher eligibility may be required for those categories in which the federal government does not participate. Also, benefits may be altered. There may be a greater effort toward reducing utilization through better patient understanding. More procedures may be placed on the prior authorization list. Monitoring of higher usage recipients may be implemented. There are many other possibilities of which the most extreme is to scrap the entire program and rewrite it from the beginning. This has been mentioned as a possibility but it too presents a variety of hazards that are immediately apparent.



Personalities—IN KANSAS MEDICINE

Robert G. Rate, Halstead, discussed "An Evaluation of Various Types of Repair of Esophageal and Hiatal Hernia" at Walter Reed Army Research Institute, Walter Reed Hospital, in April.

The Fellowship degree of the American College of Radiology has been awarded to John W. Travis, Topeka; James R. Stark and Simon E. Hershorn, both of Wichita. The presentations were made in April during the annual meeting of the ACR in Dallas.

John A. Billingsley, Kansas City, has been named Greater Kansas City Man of the Year by the Sigma Alpha Epsilon fraternity. The award was presented to Dr. Billingsley in March.

Ernie J. Chaney and family, Belleville, are planning a month's work-vacation trip to Guatemala the latter part of June. Dr. Chaney and his family will live and work in a small Indian village during their stay in Guatemala. The program in which they are participating is sponsored by AMDOC (American Doctors Overseas).

Charles E. Brackett, Jr., Kansas City, assumed his duties as acting provost and dean of the University of Kansas Medical Center in Late April. He began his new duties after returning from Europe where he attended an international symposium on head injuries.

Warren Meyer, Wichita, has been appointed to the Wichita-Sedgwick County Board of Health.

William Nice, Topeka, was one of the speakers at the seven-state Mid-West Health Congress held in Kansas City in March. Dr. Nice is chairman of inhalation therapy at St. Francis Hospital in Topeka.

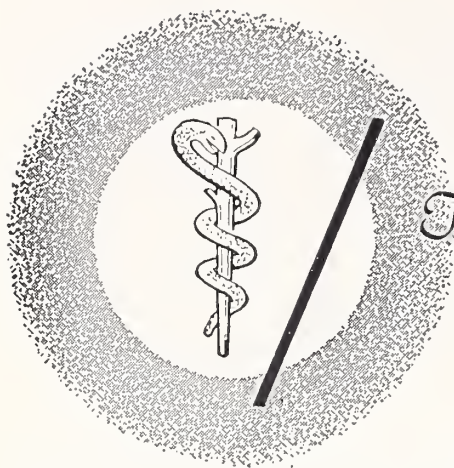
Dr. and Mrs. I. J. Waxse, Oswego, attended a medical convention at Palm Springs, California, in March.

Chief of the School Health Section, Kansas State Department of Health, Evelyn Gendel, spoke at a symposium for youth sponsored by the Nemaha County Mental Health Association. The symposium was held at Sabetha in March.

Frank C. Brosius, Jr., Wichita, and Don R. Miller, Kansas City, were granted Fellowships in the American College of Cardiology recently.

The 50-year milestone in the career of A. B. McConnell, Burlington, was marked by a city celebration sponsored by the civic groups of that community in April.

A special community service citation from the National Recreation and Park Association was presented to Winston L. Anderson, Lawrence. The Award was given to Dr. Anderson at the Recreation Commission Sports Banquet held in Atchison in April. Dr. Anderson was in general practice in Atchison until last summer when he became the team physician of the University of Kansas football squad.



The Kansas Press Looks at Medicine

Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.

My favorite physician, this month, is Dr. R. R. Melton, of Marion. Dr. Melton wrote his way into my affections last year with a spirited letter contending that the late Dr. Arthur Hertzler, not Adolph Rupp, is the best known and most distinguished person ever to live in our neighboring city of Halstead.

Mr. Rupp's basketball players at Kentucky University have been picked as the No. 1 team nationally by the Associated Press and United Press International, but Dr. Melton's opinion is unchanged. He still considers Dr. Hertzler to be the No. 1, all-time citizen of Halstead.

In support of this opinion, Dr. Melton sent me a letter for pleasant instruction. I will herewith quote from it at length:

"Since I spent some time (as intern and resident in 1932, 1933, 1934, 1935) with Dr. Hertzler and have always been interested in his writings I recalled an article of his that was printed in a publication in England called *The Journal-Lancet*. The date was 1930. The article starts off with statements concerning the High Cost of Medical Care. He stated that in his judgment the high cost comes about because the patient is given too much of what he does not need, and with equipment too expensive to accomplish the end to be attained. He quoted Dr. Ray Lyman Wilbur,* who said it in an address in Kansas City, that a good doctor should be able to make 80 per cent of his diagnoses in his BVDs (underwear) . . . meaning that he didn't need all the tests the people are subjected to.

"Nowadays it is thought that this population explosion has just been recently recognized.

"However, Doctor Hertzler states, in this same paper in April, 1930 'sometime civilization is going to have to tackle the limitation of babies or the Malthusian law will most certainly get us. The committee now meeting in London (January 1930) had better busy themselves with the limitation of babies. By so doing that would limit overcrowding and also the urge to build battleships.'

"The last time I wrote to you it was concerning the famous citizens from Halstead—Arthur Hertzler or Adolph Rupp. My vote still goes to Hertzler. Too bad he can't be here yet, since the thoughts he expressed in 1930 are now being recognized—40 years later."

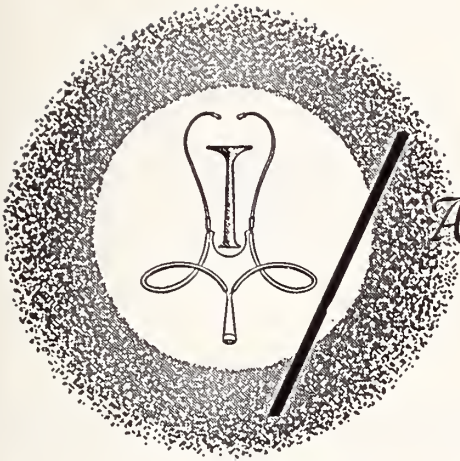
The foundation established in honor of Dr. Hertzler is making special efforts during 1970, the centennial year of Dr. Hertzler's birth.

Things are going just great at the Hertzler Foundation Health Museum, thank you, and many great events are being planned for the celebration of Dr. Hertzler's 100th birthday.

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LIBRARIES**

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HAPPY TO ASSIST YOU**

* Dr. Wilbur was Secretary of Interior in President Herbert Hoover's Administration.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the Doctor's Calendar. Notice of the session is posted in advance to allow the physician time to make preparations.

JUNE

- June 3-5 Cardiology for Nurses. *Cardiovascular Nursing: The Decade in the Computer Age*, Glenwood Manor, Overland Park. Sponsored by the Kansas Heart Association, Inc.
- June 8-9 Conference on medical staff organization and management sponsored by the Catholic Hospital Association, Convention-Exposition Center, Cincinnati, Ohio.
- June 9-12 55th annual convention, Catholic Hospital Association, Convention-Exposition Center, Cincinnati, Ohio.
- June 13-14 American Diabetes Association, Stouffer's Riverfront Inn, St. Louis. Contact: Mr. J. Richard Connelly, 18 E. 48th Street, New York 10017.
- June 16 Diabetes Mellitus is the subject for discussion at a meeting sponsored by the Lincoln County Medical Society at North Platte, Nebraska. Participants are Dr. Priscilla White, Joslin Clinic, Boston; Dr. Karl Sussman, Denver, and Dr. John Galloway, Indianapolis. For more information write: James E. Nickel, M.D., 102 S. Elm, North Platte, Nebraska 69101.
- June 19-20 Annual scientific session of the American Rheumatism Association Section and Allied Health Professions Section (June 19 only), of the Arthritis Foundation, Detroit Hilton Hotel, Detroit, Michigan. Information may be obtained from the Arthritis Foundation, 1212 Avenue of the Americas, New York 10036.
- June 21-25 American Medical Association, Chicago. Write: Ernest B. Howard, M.D., Exec. Vice President, 535 N. Dearborn, Chicago 60610.

June 21-25

Woman's Auxiliary to the American Medical Association, Drake Hotel, Chicago. Write: Miss Margaret N. Wolfe, Secretary, 535 N. Dearborn, Chicago 60610.

JULY

July 17-18

Rocky Mountain Cancer Conference, Brown Palace Hotel, Denver. Executive Secretary: Donald G. Derry, Colorado Medical Society, 1809 E. 18th Avenue, Denver 80218.

July 27-29

Postgraduate medical assembly of South Texas, Astroworld Motor Hotel, Houston. Write: Mrs. W. H. Dahme, Exec. Secretary, Texas Medical Center, 209 Jesse H. Jones Library Building, Houston 77025.

POSTGRADUATE EDUCATION

University of Colorado:

June 15-20

General Practice Review (Estes Park)

July 6-9

Ophthalmology (Estes Park)

July 19-22

Pediatrics (Aspen)

July 27-31

Internal Medicine (Estes Park)

For further information write the Office of Postgraduate Medical Education, University of Colorado School of Medicine, 4200 East 9th Ave., Denver 80220.

University of Nebraska:

May 21-22

Cardiovascular Disease

For further information write: Department of Postgraduate Education, University of Nebraska Medical Center, 42nd and Dewey Avenue, Omaha 68105.

June 9-11

Lesions Related to the Spinal Cord: A Radiographic Pathological Correlation, University of Missouri School of Medicine, Columbia. Contact the Office of Continuing Medical Education, University of Missouri School of Medicine, Columbia 65201.



Along The BOOKSHELF

Clendening Medical Library

RECENT ACQUISITIONS

- American College of Obstetricians and Gynecologists. Standards for obstetric-gynecologic hospital services. Chicago, 1969.
- Family planning today. Philadelphia, Davis, 1969.
- Friedberg, Charles K. Current status of drugs in cardiovascular disease. New York, Grune & Stratton, 1969.
- Friedberg, Charles K. Physical diagnosis in cardiovascular disease. New York, Grune & Stratton, 1969.
- Gamage, James R. A comprehensive guide to the English-language literature on cannabis (marihuana). Beloit, Wisconsin, STASH Press, 1969.
- Ginzberg, Eli. Men, money, and medicine. New York, Columbia University Press, 1969.
- Kark, Wilfred. Tumours of bone. Baltimore, Williams and Wilkins, 1969.
- Kolb, Lawrence Coleman. Urban challenges to psychiatry; the case history of a response. 1st ed. Boston, Little, Brown, 1969.
- Kvaraceus, William Clement. If your child is handicapped. Boston, P. Sargent, 1969.
- Lowman, Edward Wynne. Aids to independent living; self-help for the handicapped. New York, McGraw-Hill, 1969.
- Mudd, Stuart. Infectious agents and host reactions. Philadelphia, Saunders, 1970.
- National Institute of Health. General Clinical Research Centers Branch. Research advances in human transplantation. Bethesda, Md., U. S. Govt. Print. Off., Washington, D. C., 1969.
- Patz, Arnall. Protection of vision in children. Springfield, Ill., Thomas, 1969.
- Plum, Fred. Recent advances in neurology. Philadelphia, Davis, 1969.
- President's Committee on Mental Retardation. MR 69: Toward progress: the story of a decade; a third report by the President's Committee on Mental Retardation about developments in the national campaign to overcome mental retardation. Washington, D. C., U. S. Govt. Print. Off., 1969.
- Rutgers Symposium on Drug Abuse, New Brunswick, N. J., 1968. Drugs and youth: proceedings. Springfield, Ill., Thomas, 1969.
- Sluiter-Eringa, H. Pulmonary arteriovenous fistula; a case-finding study and clinico-laboratory analysis of 27 cases. Springfield, Ill., Thomas, 1969.
- Smith, Donald Ridgeway. General urology. 6th ed. Los Altos, Calif., Lange Medical Publications, 1969.
- Symposium on Alcohol Metabolism, Detroit, 1968. Biochemical and clinical aspects of alcohol metabolism. Springfield, Ill., Thomas, 1969.
- Turner, Paul. Clinical aspects of autonomic pharmacology. Philadelphia, Lippincott, 1969.
- U. S. Bureau of Narcotics and Dangerous Drugs. LSD-25: a factual account. Layman's guide to the pharmacology, physiology and sociology of LSD. Washington, D. C., 1969.
- U. S. Division of Chronic Disease Programs. Kidney Disease Control Program. Kidney disease services, facilities, and programs in the United States, May 1969. Washington, D. C., U. S. Govt. Print. Off., 1969.
- Verralls, Sylvia. Anatomy and physiology applied to obstetrics. London, Pitman Medical, 1969.
- Westley, William A. The silent majority; families of emotionally healthy college students. 1st ed. San Francisco, Jossey-Bass, 1969.



Book REVIEWS

BENIGN DISEASES OF THE VULVA AND VAGINA by Herman L. Gardner and Raymond H. Kaufman. C. V. Mosby Company, St. Louis, 1969. 359 pages illustrated. \$23.50.

This is an outstanding reference book of an area of gynecology that comprises the greater portion of complaints of patients seen in the office. It will be found to be the greatest use to the gynecologist and general practitioner. The etiology, clinical features, pathology and treatment of each entity is outlined for either quick reference or more complete consideration.

Old established methods of therapy as well as completely up-to-date treatments are outlined with indications as to what can be expected from their use. The reader will feel that each form of therapy is adequately covered without excessive remarks.

The book is well printed, easy to read, and amply illustrated with excellent photographs. It would have been of greater interest to have had more of them in color. However, the real value of the text lies in its well written and arranged contents, giving the space to the more common conditions and less to the rather rare pathology, its causes and treatment. Twenty-two pages are devoted to *H. vaginalis*, reflecting the interests and efforts of the authors in establishing the presence of this disease. It largely omits reference to the pelvic contents that are infinitely and repeatedly described in other texts of gynecology and confines its attention to the less dramatic afflictions of the vulva and vagina. This is of most frequent concern in the office patient but has previously been brushed over or secondarily considered by other books on gynecology.

Every physician who treats women will be pleased to own this book for office or bedside reading.—*R.E.P.*

MANIC DEPRESSIVE ILLNESS by George Winokur, Paula J. Clayton, and Theodore Reich.

C. V. Mosby Company, St. Louis, 1969. 186 pages. \$6.50.

The authors state that their book is written from the vantage point of the classic position in psychiatry. However they label their point of view, it is one which is extremely limited and antiquated. Their review of the literature leaves out many significant contributions in this field of study. The data that they report on concerning their own patients is very questionable because the methods used are quite primitive and are more in keeping with those in use thirty years ago. For example, the authors have utilized the "structured interview," a procedure consisting of a series of questions which every patient must answer. This type of interview yields very little information about the psychological functioning of a patient and is out of keeping with the more extensive and refined methods used by most psychiatrists today. This book could be described as being similar to a new book on heart disease in which the authors refused to use electrocardiograms because they didn't believe in electricity.

The book adds nothing to the understanding of patients suffering from manic depressive illness.—*M.E.S.*

THE PRACTICE OF REFRACTION by Sir Stewart Duke-Elder. C. V. Mosby Company, St. Louis, 1969. 329 pages illustrated. \$11.75.

The author has written the classics for ophthalmologists and this book is another example of fine, concise presentations.

The book covers most of the salient points about a good eye examination, not just refraction. It also brings in the fitting of contact lenses and the grinding of spectacle lenses.

Anyone wishing to do eye examinations should acquaint themselves with this book.—*R.R.P.*

KANSAS STATE DEPARTMENT OF HEALTH
TOPEKA, KANSAS

Epidemiology & Disease Control Services—Registration & Health Statistics Services—Kansas Morbidity Incidence
Summary of Cases Reported in February, 1970 and 1969

<i>Diseases</i>	<i>February</i>			<i>January-February, Inclusive</i>		
	<i>1970</i>	<i>1969</i>	<i>5-Year Median 1966-1970</i>	<i>1970</i>	<i>1969</i>	<i>5-Year Median 1966-1970</i>
Amebiasis	4	—	1	4	—	3
Aseptic meningitis	1	1	—	1	1	—
Brucellosis	—	—	—	—	—	—
Diphtheria	—	—	—	—	—	—
Encephalitis, prim., infec.	—	—	—	—	1	—
Encephalitis, post-infect.	—	—	—	—	—	—
Gonorrhea	334	435	263	988	749	624
Hepatitis, infectious	42	29	23	72	56	49
Measles (Rubeola)	38	—	*	39	—	*
Meningococcal meningitis	—	7	3	—	9	4
Mumps	16	33	*	20	38	*
Pertussis	—	—	—	—	—	—
Poliomyelitis	—	—	—	—	—	—
Rheumatic fever	—	—	—	—	—	—
Rubella (German Measles)	6	10	*	8	14	*
Salmonellosis	8	15	15	15	30	24
Scarlet fever	17	9	9	54	15	33
Shigellosis	7	4	4	9	13	9
Streptococcal infections	170	251	222	292	506	556
Syphilis	92	198	91	210	320	180
Tinea capitis	5	1	5	9	6	9
Tuberculosis	17	16	17	29	26	31
Tularemia	—	—	—	—	—	—
Typhoid fever	—	—	—	—	—	—

* Statistics not available for 5-year median.

IMMUNIZATIONS FOR TRAVEL
TO EXPO '70

Many inquiries are being received concerning immunizations needed for travel to Japan for Expo '70. The requirements depend upon itinerary.

For direct travel to Japan and return to the United States, only a vaccination against smallpox within three years is required. This immunization must be documented by a properly executed and authenticated International Certificate of Vaccination against Smallpox. Available data indicate poliomyelitis at a low level comparable to the United States; typhoid fever and infectious hepatitis do not constitute a sufficient hazard for the person staying at usual tourist accommodations to warrant prophylaxis.

Persons visiting other countries in Asia will need an International Certificate of Vaccination against Cholera if they visit an area in which cholera is occurring. Countries presently having infected areas include BRUNEI, BURMA, INDIA, INDONESIA,

MALAYSIA, NEPAL, EAST PAKISTAN, PHILIPPINES, AND VIETNAM. If the itinerary includes Australia, that country requires a Cholera Certificate of arrivals from Korea and Thailand, in addition to those already listed.

Individuals traveling elsewhere in Asia should have received at some time a full course of immunizations against poliomyelitis, either with inactivated or oral (live) vaccine. A "booster" dose of trivalent oral vaccine is suggested, but such reinforcement is needed only once and need not be repeated if received for a previous trip. Vaccination against typhoid fever and immune serum globulin prophylaxis of infectious hepatitis are also suggested. The former (typhoid vaccine) should be received several weeks prior to departure for maximal effect, and the latter (ISG) within one to two weeks of departure. Chloroquine prophylaxis of malaria is suggested for Burma, Cambodia, Indonesia, Laos, Malaysia, New Caledonia, the New Hebrides, Papua-New Guinea, Philippines, Thailand and Vietnam.



RICHMOND E. BENNETT, M.D.

Dr. Richmond E. Bennett, 65, Beloit, died on March 17, 1970, following a long illness.

Dr. Bennett was born in Paonia, Colorado, on April 19, 1904. He received his Doctor of Medicine degree from the University of Colorado School of Medicine in 1929. He came to Beloit in 1930 as a resident physician at the Community Hospital. He practiced medicine in Mankato and Jewell County for eight years, returning to Beloit in 1939, where he continued to practice until illness forced his retirement in 1964. Dr. Bennett served in the medical corps of the Air Force during World War II. He was a member of the Episcopal Church, the American Legion and Elks Lodge.

Surviving Dr. Bennett are his wife and two sons.

RALPH I. CANUTESON, M.D.

Dr. Ralph I. Canuteson died at his home in Lawrence on March 31, 1970. He was 74 years old.

He was born April 2, 1895, at Arcadia, Wisconsin, and had lived in Lawrence since 1928. He received his medical degree from the University of Minnesota in 1927. Dr. Canuteson was widely known for his work to have health education courses included in school curricula, and was director of the University of Kansas student health service from 1928 to 1965. He was a founder and charter member of the Kansas Thoracic Society, past president of the Kansas Tuberculosis and Health Association, the Mississippi Valley Thoracic Society and the Kansas Heart Association. He had received several awards for outstanding service in the field of public health.

Dr. Canuteson is survived by his wife.

Memorial contributions may be made to the Ralph I. Canuteson Memorial Fund, University of Kansas, in care of the University of Kansas Endowment Association.

RALPH W. SPRINGER, M.D.

Dr. Ralph W. Springer, 91, retired physician, died on March 15, 1970, at the Harper Hospital.

Dr. Springer was born August 12, 1878, at Mason City, Illinois. He was graduated from the Southwest School of Medicine, Kansas City, Missouri, in 1914. He practiced at Kingman until his retirement in 1943. Since his retirement, he had lived at Harper. He was a member of the Baptist Church and the Masonic Lodge.

Surviving Dr. Springer is his wife.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

David G. Anderson, M.D.
2415 Main Street
Hutchinson, Kansas 67501

Paul A. Baumann, M.D.
6042 East 13th Street
Wichita, Kansas 67208

Owen E. Carper, M.D.
Axtell Clinic
Newton, Kansas 67114

Gabriel E. Chan, M.D.
Bethel Clinic
Newton, Kansas 67114

West A. Clabaugh, M.D.
559 Brookfield
Wichita, Kansas 67206

Harold D. Davidson,
M.D.
1031 Vincent Lane
Wichita, Kansas 67206

Antonio C. Durano, M.D.
959 North Emporia
Wichita, Kansas 67214

Luis A. Fernandez, M.D.
3107 West 21st Street
Topeka, Kansas 66604

Grace Holmes, M.D.
K. U. Medical Center
Kansas City, Kansas 66103

Earl D. Kirk, Jr., M.D.
435 North Hillside
Wichita, Kansas 67214

Gerald D. Nelson, M.D.
925 North Emporia
Wichita, Kansas 67214

James W. Neumann, M.D.
K. U. Medical Center
Kansas City, Kansas 66103

Harold L. Parker, M.D.
841 North Broadway
Wichita, Kansas 67214

Yusuf Quamar, M.D.
Axtell Clinic
Newton, Kansas 67114

Russell O. Settle, Sr.,
M.D.
The Menninger
Foundation
Topeka, Kansas 66601

Fred L. Tasker, M.D.
St. Joseph Hospital
Wichita, Kansas 67214

Terry A. Tracy, M.D.
2703 East Central
Wichita, Kansas 67214

H. H. Forsyth Winchell,
M.D.
St. Francis Hospital
Wichita, Kansas 67214

Albert P. Kovac, M.D.
St. Joseph Hospital
Wichita, Kansas 67218

NEW CHILD HEALTH BOOKLET PUBLISHED

The American Academy of Pediatrics has published a comprehensive booklet covering all aspects of child health care written especially to answer the many questions which frequently confront parents concerning the health of their children.

Entitled *Growing Pains*, the publication includes helpful information on such broad-ranging subjects as accidents, bedwetting, bottle feeding, cancer, color blindness, diet and eating habits, emotional problems, growth, head-banging, physical examinations, language and grammar, obesity, popularity, reading, running away, toilet training, and vaccination and vaccines.

Copies of the 230 page publication may be obtained from the Academy for \$1.00 per copy. The Academy is located at 1801 Hinman Avenue, Evanston, Illinois 60204. Requests for the booklet should

be sent to the Publications Department at the Academy.

The *Growing Pains* booklet consists of answers to letters on all aspects of child health published by the Academy in its monthly column appearing in *Today's Health*, the family magazine published by the American Medical Association.

The publication was written by former practicing pediatricians who are members of the Academy medical staff, to assist parents in developing a more thorough understanding and knowledge of specific child health problems.

Development of the booklet represents one of the more significant public education endeavors undertaken by the AAP in recent years.

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Journal

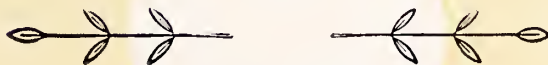
OF THE

Kansas

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JUNE
1970



VOL. LXXI
NO. VI

The girth control pill



Tepanil[®] Ten-tab[®] (continuous release form) (diethylpropion hydrochloride)

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not on the 'nerves'

When girth gets out of control, TEPANIL can provide sound support for the weight control program you recommend. TEPANIL reduces the appetite—patients enjoy food but eat less. Weight loss is significant—gradual—yet there is a relatively low incidence of CNS stimulation.

Contraindications: Concurrently with MAO Inhibitors, in patients hypersensitive to this drug; in emotionally unstable patients susceptible to drug abuse.

Warning: Although generally safer than the amphetamines, use with great caution in patients with severe hypertension or severe cardiovascular disease. Do not use during first trimester of pregnancy unless potential benefits outweigh potential risks.

Adverse Reactions: Rarely severe enough to require discontinuation of therapy, unpleasant symptoms with diethylpropion hydrochloride have been reported to occur in relatively low incidence. As is characteristic of sympathomimetic agents, it may occasionally cause CNS effects such as insomnia, nervousness, dizziness, anxiety,

and jitteriness. In contrast, CNS depression has been reported. In a few epileptics an increase in convulsive episodes has been reported. Sympathomimetic cardiovascular effects reported include ones such as tachycardia, precordial pain, arrhythmia, palpitation, and increased blood pressure. One published report described T-wave changes in the ECG of a healthy young male after ingestion of diethylpropion hydrochloride; this was on isolated experience, which has not been reported by others. Allergic phenomena reported include such conditions as rash, urticaria, ecchymosis, and erythema. Gastrointestinal effects such as diarrhea, constipation, nausea, vomiting, and abdominal discomfort have been reported. Specific reports on the hematopoietic system include two each of bone marrow depression, agranulocytosis, and leukopenia. A variety of miscellaneous adverse reactions have been reported by physicians. These include complaints such as dry mouth, headache, dyspnea, menstrual upset, hair loss, muscle pain, decreased libido, dysuria, and polyuria.

Convenience of two dosage forms: TEPANIL Ten-tab tablets: One 75 mg. tablet daily, swallowed whole, in midmorning (10 a.m.); TEPANIL: One 25 mg. tablet three times daily, one hour before meals. If desired, an additional tablet may be given in mid-evening to overcome night hunger. Use in children under 12 years of age is not recommended.

T-006A / 1/70 / U.S. PATENT NO. 3,001,910



THE NATIONAL DRUG COMPANY
DIVISION OF RICHARDSON-MERRELL INC
PHILADELPHIA, PENNSYLVANIA 19144



Electron Microscopy

Sudden Death in Patients Under Phenothiazine Therapy: Study of Three Cases

RAMON A. GUILLAN, M.D.,* SAMUEL ZELMAN, M.D.,†

R. E. REINERT, M.D.,‡ *Topeka; and*

ROBERT L. SMALLEY, Ph.D.,§ *Emporia*

AS FAR BACK AS 1954, there have been reported cases of sudden death of patients receiving phenothiazines.¹ Many explanations have been advanced, none entirely satisfactory.²⁻⁵ Since 1957, we have had ten cases of unexplained sudden death of phenothiazine-treated patients. Their clinical and autopsy findings followed a monotonous pattern:

1. Sudden death of an apparently healthy psychiatric patient who had been receiving high doses of phenothiazines.

2. Cyanosis, extreme passive congestion and edema without evident cause, and parenchymal hemorrhages of the lungs.

These postmortem appearances are characteristic of acute hypoxic deaths.⁶ It has been increasingly suggested that cardiac arrhythmias may be responsi-

ble for these deaths of phenothiazine-treated patients.⁷⁻⁹ Samples of myocardial tissue obtained from our three most recent cases were therefore subjected to electron microscopic study in a search for ana-

The hearts of three patients who died unexpectedly while under phenothiazine therapy were examined by means of an electron microscope. Marked mitochondrial damage was seen in all three cases as represented by swelling and clumping of cristae into osmiophilic masses. There was also increase in electron dense material inside the mitochondria. Myofibril degeneration was also present.

The electron microscopic changes observed are by no means specific. They mainly showed that damage to the heart is present at the ultrastructural level, probably due to phenothiazines. Similar changes have been described in other types of heart disease.

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tomic aberrations not found by the usual light microscopic studies. The phenothiazine content of the tissue was estimated by the method of Wechsler and Forrest.¹⁰

Materials and Methods

Heart tissue was obtained less than one hour after death, using a biopsy needle technique, in order to keep autolysis to a minimum. The tissue was placed in 4 per cent glutaraldehyde in 0.1M phosphate buffer at pH 7.2 for 15 minutes and then in 1 per cent osmium tetroxide for one to two hours. After fixation, the material was dehydrated in alcohols of increasing concentrations and embedded in equal parts of propylene oxide and resin mixture Exon 812. Sections were examined with a Hitachi H.S.-8 electron microscope. Tissue from the hearts of two non-phenothiazine-treated patients were used for control studies. Control Heart Number One was obtained from a patient who died suddenly with acute coronary insufficiency. Control Heart Number Two was obtained from a young man who died from injuries received in a car accident.

Pertinent Clinical and Autopsy Data

CASE NUMBER ONE: A 43-year-old man with organic brain syndrome and psychosis was hospitalized because of irritability, hallucinations, and bizarre behavior. He denied any history of excessive alcoholic

intake. The only abnormal result of laboratory testing was a positive serologic test for syphilis. Psychological evaluation found disorientation and severe intellectual impairment. Chlorpromazine, 250 milligrams four times a day, was prescribed. Three days later, at 3:55 p.m., the patient was found dead, sitting on the floor with his head and shoulders resting on the bed. He was cyanotic, with dilated pupils, and vital signs were absent.

Myocardial tissue obtained at autopsy contained 4.31 milligrams of phenothiazine per 100 grams, and the calculated content of the total heart was 11.2 milligrams.

CASE NUMBER TWO: A 54-year-old man had been hospitalized since 1946 because of a schizophrenic reaction, paranoid type. For the past three years, he had been a member of a supervised out-of-hospital living group. It was reported that he had arisen on the morning of his death, visited the toilet, and returned to bed. There he was found later in the morning, either comatose or dead, and was dead on arrival at the hospital. At the time of his death, he had been receiving chlorpromazine, 200 milligrams twice daily.

Myocardial tissue obtained at autopsy contained 1.23 milligrams of phenothiazine per 100 grams, and the calculated content of the total heart was 5.72 milligrams.

CASE NUMBER THREE: A 45-year-old man with previous diagnosis of anxiety reaction was readmitted

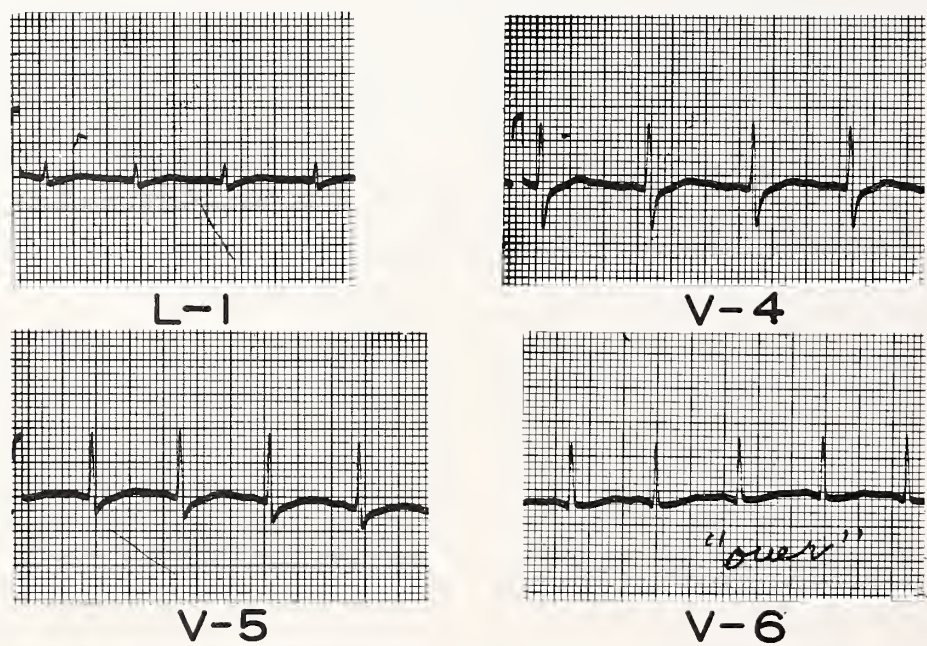


Figure 1. Electrocardiogram showing sinus tachycardia and flat T-waves in leads 1 and V4 through V6.

August 25, 1969, because of recurrent asthmatic attacks of increasing frequency and severity during the preceding three months. He had developed bronchial asthma five years earlier, following an attack of pneumonia. Physical examination was negative except for bilateral inspiratory and expiratory wheezing. A chest x-ray film was negative. The hemoglobin was 16.8 grams, hematocrit 50 per cent, and leucocyte count was normal. SGO and SGP transaminases were elevated to 95 and 108 Sigma units respectively. An electrocardiogram showed sinus tachycardia and flat T-waves in leads 1 and V4 through V6 (*Figure 1*), consistent with possible anterolateral ischemia.

By the fourth hospital day, the asthma had almost completely subsided and was not again a serious problem. On the sixth hospital day, because of agitation and bizarre behavior, 100 milligrams of chlorpromazine was given intramuscularly with considerable relief for the patient. Four days later, on September 3, 1969, because of sleeplessness, anorexia, and agitation, unrelieved by chlorpromazine, amitriptyline (Elavil), 25 milligrams, three times a day, was prescribed. On September 12, 1969, he was extremely agitated, disoriented, sleepless and vividly hallucinating. Mellaril, 100 milligrams four times daily, was substituted for chlorpromazine. Because of increased hallucinations and restlessness, at 10:00 p.m. on the same day, he received 100 milligrams of thorazine intramuscularly. The oral isoproterenol (Isuprel) inhaler he had been using was removed from his room. At 1:00 a.m. the following morning, he died suddenly with apnea and generalized convulsions.

Myocardial tissue obtained at autopsy contained 4.3 milligrams of phenothiazine per 100 grams, and the calculated content of the total heart was 11.8 milligrams.

Autopsy Findings

Autopsy findings were similar in the three cases. Extreme congestion of all body organs was found. The lungs were markedly congested with bilateral focal areas of hemorrhages. There was no evidence of aspiration of gastric content in any of the patients. The only cardiac finding was moderate hypertrophy in Case Number Two (*Table 1*). The coronary arteries in Case Numbers One and Three were normal. Case Number Two showed slight-to-moderate coronary atheromatosis without occlusion. Microscopic examination failed to disclose changes which could explain sudden death.

Electron Microscopic Examination (*Figures 2-9*)

The two control hearts showed well-preserved mitochondria and well-formed cristae. The hearts of the three patients showed mitochondrial swelling with diffuse clumping of cristae into osmiophilic masses. Increased electron dense material was present within mitochondria. Myofibril degeneration was also present, most marked in Case Number Two.

Discussion

The mitochondrion is a cell organelle bounded by a double membrane within which are membranous

TABLE 1
CLINICAL AND AUTOPSY DATA

Case No.	Age	Diagnoses	Mode of Death	Drug Intake at Time of Death	Length of Time on Drug	Heart Weight	Gross Findings	Coronary Arteries
1	53	Organic brain syndrome with psychosis	Sudden death	Thorazine 200 mg qid	Unknown*	260 gm.	Normal	Normal
2	52	Dementia praecox, paranoid type	Sudden death	Thorazine 200 mg bid	More than 5 years	540 gm.	Hypertrophy	Slight-to-moderate atheromatosis
3	45	Anxiety reaction	Sudden death	Thorazine 100 mg IM & Mellaril 100 mg qid	On and off for several years	275 gm.	Normal	Normal

* Patient was transferred to this hospital from a private institution. Medications administered prior to transfer is unknown.

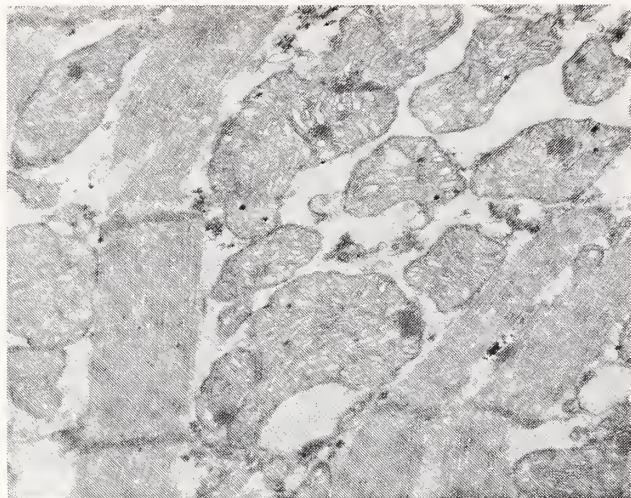


Figure 2. Control Heart Number One (from patient showing coronary atherosclerosis). Electron micrograph showing well-preserved cristae and myofibers. Magnification 6,000 \times .

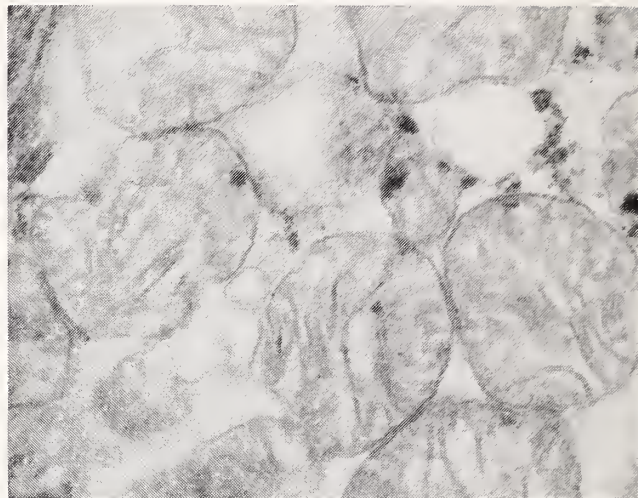


Figure 3. Control Heart Number Two (normal heart). Electron micrograph showing well-preserved mitochondria. Magnification 10,000 \times .

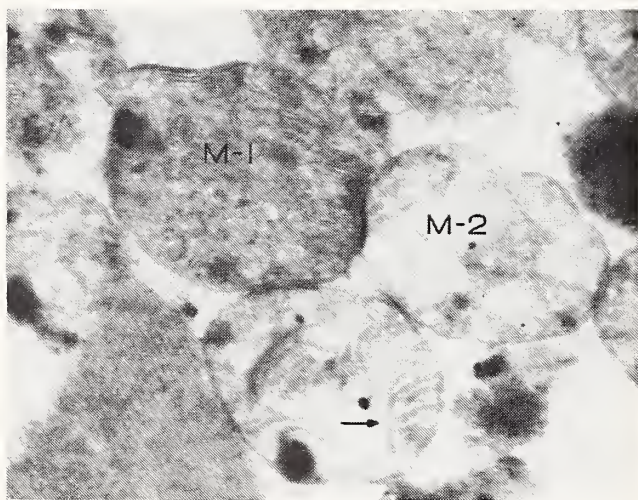


Figure 4. Case Number One: M-1 = mitochondrion showing disruption of cristae and increased electron dense material. Remnants of cristae can still be seen. M-2 = mitochondrion showing marked vacuolization. Arrow points to remnants of cristae in mitochondrion showing vacuolization. Magnification 19,000 \times .

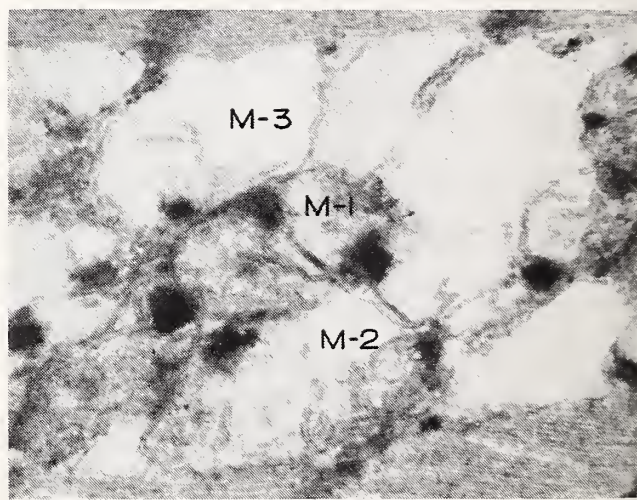


Figure 5. Case Number One: M-1 = mitochondrion showing vacuolization and increased electron dense material. M-2 = remnants of cristae can still be seen as well as marked vacuolization. M-3 = mitochondrion showing severe vacuolization with disappearance of cristae. Magnification 19,000 \times .

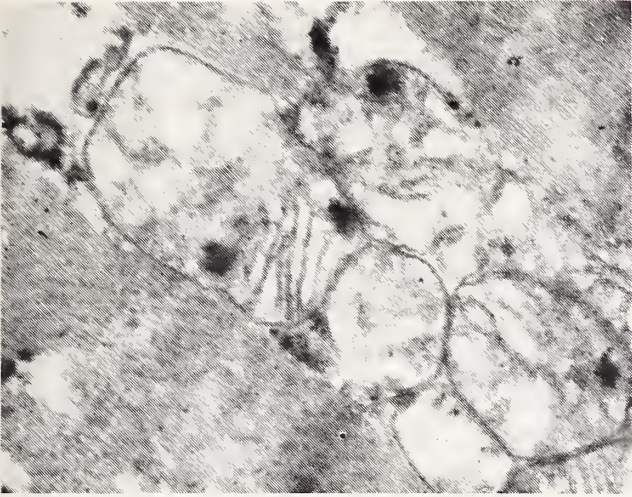


Figure 6. Case Number Two: Group of mitochondria showing extreme vacuolization. Remnants of cristae can still be seen. Magnification 19,000 \times .

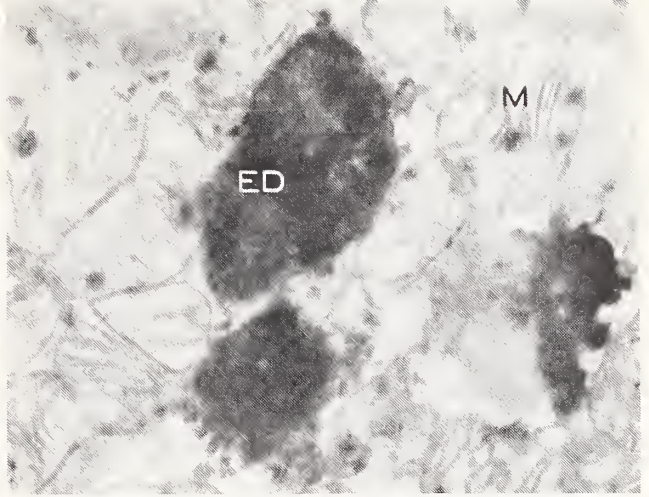


Figure 7. Case Number Two: M = mitochondria. ED = marked increase in electron dense material, probably lipofuscin. Magnification 16,000 \times .

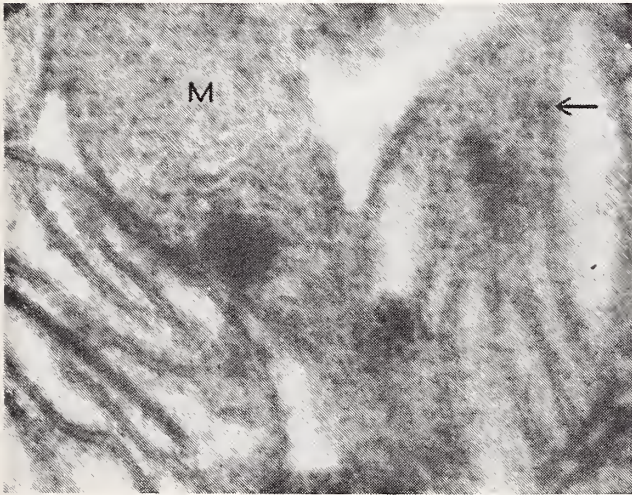


Figure 8. Case Number Two: M = mitochondria showing severe disruption of cristae into osmiophilic masses and increase in electron dense material. Remnants of cristae can still be seen. Arrow points to mitochondria showing early degeneration of cristae. Magnification 52,000 \times .

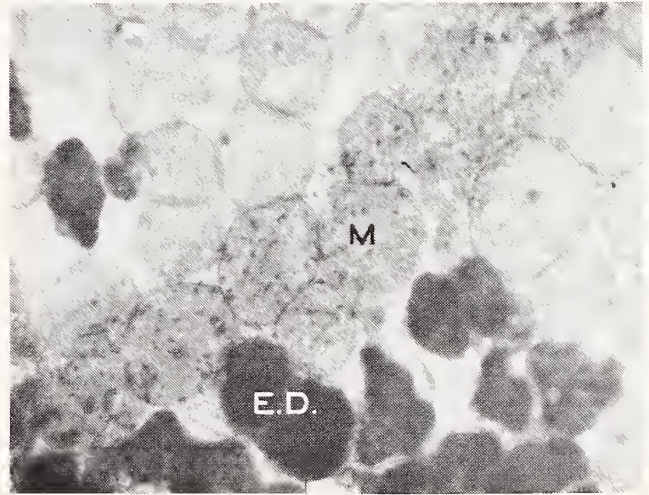


Figure 9. Case Number Three: M = groups of mitochondria showing degeneration of cristae into granular osmiophilic masses. ED = electron dense material (lipofuscin). Magnification 8,000 \times .

cristae, either villous or vesicular, a ground substance, and, occasionally, very dense granulations.¹¹ In muscle, there is an obvious relationship between tissue activity, the number of mitochondria, and their concentrations of cristae. In very active striated muscle and in myocardium, mitochondria are numerous and cristae are densely packed.¹¹ The dense granulation of the mitochondrial matrix occurs in cells through which flow significant quantities of water and solutes, as in the tubular cells of the kidney. The mitochondria of cells not fulfilling such duties have few dense granules, as in myocardium.¹²

The swelling of mitochondria is an early sign of cell damage.¹³ Although swelling may be marked, it is considered to be reversible.¹⁴ Other mitochondrial changes which are irreversible are:¹¹

1. The mitochondrial membrane becomes single but unbroken or may be disrupted.

2. The cristae, through vesiculation, break up into granulations and disappear.

3. The matrix assumes a roughly granular or filamentous appearance or is converted into osmophilic masses.

All these changes were represented in our cases, especially in the heart of patient number two. Since these changes are irreversible, with the exception of mitochondrial swelling, it would appear that the ultramicroscopic changes in the heart due to phenothiazines would be permanent, once they had passed the initial stage of swelling. Patients with such changes might be expected to show electrocardiographic or clinical cardiac abnormalities if the changes were sufficiently widespread or strategically located in the myocardium. This was evident in patient number three in which an electrocardiogram disclosed sinus tachycardia and flat T-waves in leads I and V4 through V6. SGO and SGP transaminases were also elevated to 95 and 108 Sigma units respectively in this case. Alexander¹⁵ reports mitochondrial damage in a 29-year-old patient taking phenothiazine drugs who had cardiomegaly, gallop rhythm, and heart failure.

Mitochondria are the chief, if not the exclusive, sites of oxidative phosphorylation, the process by which energy of foodstuffs is made available to cell metabolism and cell function.¹⁶ They require a fuel supply in the form of fatty acids, pyruvate, or amino acids as well as ADP and phosphate for maximal respiration.¹⁷ The ATP produced by mitochondria is utilized at other specific sites in the cell such as those responsible for myocardial contraction.¹⁷

Of the many effects of phenothiazine drugs, one of the most important is the inhibition of mitochondrial respiration and respiratory center depressant action.^{4, 18} Our finding of mitochondrial damage in patients receiving phenothiazine drugs, indi-

cates a direct action of these drugs upon the mitochondrial structures of the heart. These changes are by no means specific. Similar changes have been described in other types of heart disease.^{19, 20}

We wish to thank Mr. William K. Gaines, H.T., A.S.C.P., for the technical assistance he provided, and Mrs. Jeanne P. Parsons for the typing of the manuscript.

References

1. Johnson, F. P.; Boyd, D. A., Jr.; Sayre, G. P. and Tyce, F. A. J.: Sudden death of a catatonic patient receiving phenothiazine. *Amer. J. Psychiat.* 121:504, 1964.
2. Leestma, J. E. and Koenig, K. L.: Sudden death and phenothiazines. A current controversy. *Arch. Gen. Psychiat.* 18:137, 1968.
3. Reinert, R. E. and Hermann, C. G.: Unexplained deaths during chlorpromazine therapy. *J. Nerv. Ment. Dis.* 131:435, 1960.
4. Renzetti, A. D., Jr. and Padget, W. R.: The acute respiratory effects of chlorpromazine in man. *J. Lab. Clin. Med.* 50:400, 1957.
5. Richardson, H. L.; Graupner, K. I. and Richardson, M. E.: Intramyocardial lesions in patients dying suddenly and unexpectedly. *J.A.M.A.* 195:254, 1966.
6. Smith, E. B.; Beamer, P. R.; Vellios, F. and Schulz, D. M.: *Principles of Human Pathology*. New York, Oxford University Press, 1959.
7. Kelly, H. G.; Fay, J. E. and Laverty, S. G.: Thioridazine hydrochloride (Mellaril): Its effect on the electrocardiogram and a report of two fatalities with electrocardiographic abnormalities. *Canad. Med. Assn. J.* 89:546, 1963.
8. Graupner, K. I.; Murphree, O. D. and Meduna, L. J.: Electrocardiographic changes associated with the use of thioridazine. *J. Neuropsychiat.* 5:344, 1964.
9. Ban, T. A. and St. Jean, A.: The effect of phenothiazines on the electrocardiogram. *Canad. Med. Assn. J.* 91:537, 1964.
10. Wechsler, M. B. and Forrest, I. S.: A quantitative method for the determination of chlorpromazine in tissues. *J. Neurochem.* 4:366, 1959.
11. Rouiller, C.: Physiological and pathological changes in mitochondrial morphology. *Int. Rev. Cytol.* 9:227, 1960.
12. Weiss, J. M.: Mitochondrial changes induced by potassium and sodium in duodenal absorptive cell as studied with electron microscope. *J. Exp. Med.* 102:783, 1955.
13. Faure-Fremiet, E.: Etude sur les mitochondries des protozoaires et des cellules sexuelles. *Arch. Anat. Micr. Morph. Exp.* 11:457, 1910.
14. Gansler, H. and Rouiller, C.: Modifications Physiologiques et pathologiques du chondriome. Etude au microscope électronique. *Schweiz. Z. Allg. Path.* 19:217, 1956.
15. Alexander, C. S.: Cardiotoxic effects of certain psychotropic drugs including electron microscopic changes on myocardial biopsy. *Circulation* 38 (Suppl. VI): VI-32, 1968 (abstract).
16. Novikoff, A.: Mitochondria in the cell. In *The Cell: Biochemistry, Physiology, Morphology* (Vol. 2), ed. by Brachet, J. and Mirsky, A. E. New York, Academic Press, Inc., 1961.
17. Lehninger, A. L.: *The Mitochondrion; Molecular Basis of Structure and Function*. New York, W. A. Benjamin, Inc., 1964.
18. Zbinden, G.: The significance of pharmacologic screening tests in the preclinical safety evaluation of new drugs. *J. New Drugs* 6:1, 1966.
19. Kisch, B.; Cavusoglu, M. and Marangoni, B. A.: Electron microscopic changes in the human heart in cardiac failure. *Exp. Med. Surg.* 17:85, 1959.
20. Wellmann, K. F.: Beer drinker's myocardiosis. Report of a case with electron microscopic observations. *Amer. J. Clin. Path.* 50:444, 1968.

Hereditary Spherocytosis—

—With Polycythemia? Report of a Case and a Brief Discussion

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Report of a Case

A 39-YEAR-OLD MALE was referred to St. Luke's Hospital for evaluation and treatment of his reported polycythemia. The patient felt well and doubted that he needed medical attention, but careful questioning identified the following mild symptoms.

He had noticed a ruddy appearance to his complexion for many years, and he occasionally experienced dizziness and slight numbness and tingling of the extremities. He became short of breath after walking one block or a half-flight of stairs. He had brief and mild left anterior chest pains when he felt the heart beat irregularly and stronger or faster than normal; but this had never affected his activity. Medications included digoxin 0.25 mg qd, diazepam 5 mg tid, and chlorothiazide 500 mg occasionally. Phlebotomies of 500 to 1000 cc whole blood had been performed an average of two or three times a year because of the reported polycythemia.

Twelve years before admission a splenectomy had been performed for "jaundice and a congenital blood problem with irregularly shaped cells." Three months later a cholecystectomy was done because of cholelithiasis. He had been hospitalized eight months before this admission following an acute anterior myocardial infarction; since then mild congestive heart failure had been treated with the medicines mentioned. He had smoked one pack of regular cigarettes a day all of his adult life. The patient's mother, sister, and two sons have the same "blood problem," and each has had a splenectomy.

The vital signs were normal. The patient appeared in good health and had a ruddy (but not cyanotic) complexion. Ophthalmoscopic examination showed grade I arteriosclerotic changes. Physical examination of the heart and lungs was normal, and so was the remainder of the initial examination except for the presence of healed left and right upper abdominal surgical scars.

The history and physical examination did not yield information particularly typical of the reported

diagnosis, polycythemia. However, the initial problems appeared to be confirming the diagnosis, identifying its etiology (if possible), and deciding on appropriate treatment. In addition, the history of splenectomy, and the possible reasons for it, were intriguing.

Laboratory results were as follows. The hemoglo-

A case of hereditary spherocytosis, twelve years after splenectomy, is presented. Although concomitant polycythemia had been diagnosed, appropriate laboratory tests failed to confirm that impression. In fact, only one case could be found reported in the literature where polycythemia vera occurred following splenectomy for hereditary spherocytosis. In the end, post-splenectomy (secondary) thrombocytosis was felt to be the correct diagnosis; and the clinical importance and rational treatment of this condition is discussed.

bin was 17.9 gms per cent, hematocrit 49 per cent, erythrocyte count, 5,780,000/mm³, reticulocytes 1.6 per cent, red cell indices normal; and hemoglobin electrophoresis identified type AA hemoglobin with 3 per cent fetal hemoglobin. The leukocyte count was 12,800/mm³, with a normal differential, and the platelet count was 842,000/mm³. Total blood volume by the radioiodinated serum albumin (RISA) method was 5333 cc (76 cc/kg, with normal 69-80), red cell mass 2117 cc (30 cc/kg, with normal 28-37), and plasma volume 3216 cc (45 cc/kg, with normal 39-45). Spherocytes and Howell-Jolly bodies were seen in the peripheral smear, but no other lesions were seen in a bone marrow aspiration. Red cell osmotic fragility was distinctly positive. Prothrombin time, partial thromboplastin time, bleeding time, and euglobulin lysis were normal. Direct and indirect Coombs' tests were negative. After exercise, arterial pH was 7.43, pO₂ 79, pCO₂ 34, and pulmonary function studies showed only mild re-

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strictive changes. Pulmonary fibrotic changes were suggested in the chest x-ray, but skull films, IVP, and liver scan were normal. The electrocardiogram showed evidence of an old anterior infarction.

The following blood tests were within normal limits: Glucose, BUN, creatinine, uric acid, total and direct bilirubin, alkaline phosphatase, total protein and albumin, SGOT, LDH, cholesterol, lipoprotein electrophoresis, calcium, phosphorus, serum iron and iron binding capacity, PBI, VDRL.

Discussion

The records of all of the patient's past hospitalizations were examined. It was found, as had been expected from current tests, that the splenectomy had been performed 12 years previously because of hereditary spherocytosis. Since that time anemia had never been a problem. The hemoglobin had varied between 15.4 and 18.2 gms per cent, the hematocrit between 41.5 and 52 per cent, the erythrocytes up to a high of 5,780,000/mm³, the leukocytes to a high of 15,500/mm³, and platelets to a high of 842,000/mm³. RISA blood volume studies six months and one month before admission were also in the normal range. Actual normal hemoglobin values from this laboratory include 12 to 16 gms per cent for women and 14 to 18 gms per cent for men, with a three-standard-deviation accuracy of 1.1 gms per cent. Normal hematocrit values include 37 to 47 per cent for women and 40 to 54 per cent for men. Erythrocyte normals include 4.2 to 5.4 million/mm³ for women and 4.6 to 6.2 million/mm³ for men, with a three-standard-deviation accuracy of 150,000 by the Coulter counter.

After the examinations reported, it was realized that this patient did not meet the diagnostic criteria for polycythemia, and no one of the known secondary causes of polycythemia was identified. However, the patient's total picture does tend to make one think of polycythemia, and he will be examined frequently in the future, when there may be new indications for doing a brain scan and carotid arteriograms, renal scan and arteriograms, chromium red cell mass and half-life, and erythropoietin determinations. It is interesting that only one case could be found reported in the literature where true polycythemia (vera) followed splenectomy for hereditary spherocytosis.¹ However, following splenectomy, patients with hereditary spherocytosis may retain elevated leukocyte and thrombocyte counts for years,² while the erythrocyte counts usually return to normal, as happened in this case where the final diagnosis was felt to be post-splenectomy (secondary or "benign") thrombocytosis.

The most interesting and controversial facet of this case may well be the occurrence of a myocardial in-

farction in a 39-year-old man with normal blood pressures and volumes, normal serum glucose and lipid studies, but with thrombocytosis. It is well accepted that post-splenectomy thrombocytosis is accompanied by an excessive amount of platelet tissue-factor activity and increased platelet adhesiveness, which may or may not be reflected in routine tests of coagulation function. This predisposes the patient to thrombosis and thromboembolism,^{3, 4} possibly explaining why this patient had a myocardial infarction and why such patients have profited from anticoagulant therapy, most often heparin, in acute problems. The vasodilator, dipyridamole, inhibits platelet aggregation and promotes disaggregation in human plasma *in vitro*.⁵ In clinical trials in preventing thrombosis in patients who have undergone prosthetic cardiac valve replacements, the use of dipyridamole (with and without other anticoagulants) had indicated promising results and warrants further investigation.^{6, 7} Warfarin and coumarin drugs have also been used, although their primary effects are on the humoral coagulation mechanisms rather than the platelets. Other compounds interfere with platelet clumping reactions but are seldom used specifically for that purpose, e.g., aspirin, phenylbutazone, sulfinpyrazone, chlorpromazine, imipramine, adenosine, prostaglandins (PGE 1), and fibrinogen degradation products.⁵

Clinically, there seems to be little doubt that the most serious problem currently confronting the patient presented here is the thrombocytosis, with its possible thrombotic complications. The correct treatment is anticoagulation, and the drugs of choice for his long term management would be aspirin or dipyridamole, with warfarin or bishydroxycoumarin.⁵

GENERIC AND TRADE NAMES OF DRUGS

1. Digoxin—Lanoxin, Davoxin, etc.
2. Diazepam—Valium
3. Chlorothiazide—Diuril
4. Dipyridamole—Persantine
5. Aspirin
6. Phenylbutazone—Butazolidin
7. Sulfinpyrazone—Anturane
8. Chlorpromazine—Thorazine
9. Imipramine—Tofranil
10. Sodium Warfarin—Coumadin, Panwarfin
11. Bishydroxycoumarin—Dicumarol

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(Continued on page 222)

Clinical Cardiology

Recognition of Pulmonary Embolism

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THE DIAGNOSIS of acute pulmonary thromboembolism may be derived from history, symptoms, physical findings, electrocardiogram, serum enzymes, chest roentgenogram, pulmonary function tests, isotope lung scan, and pulmonary angiography. Of these, angiography is by far the most accurate and specific in detecting the presence and extent of embolic disease. Indeed, angiography may be absolutely necessary to establish the diagnosis in the presence of congestive heart failure, or to differentiate such conditions as atelectasis, pneumonia, acute myocardial infarction, and peritonitis.

The symptoms of acute pulmonary embolism are notoriously protean, so that the disease may mimic a variety of neurological, cardiovascular, respiratory, and upper abdominal disorders. Dyspnea, restlessness, and apprehension are common, as are symptoms due to cerebral ischemia such as dizziness, syncope, and convulsive phenomena. Dull substernal pain signals massive embolism, and is probably secondary to coronary insufficiency. If pulmonary infarction ensues, pleuritic pain, cough, and hemoptysis may develop. Wheezing occurs infrequently with acute pulmonary embolism, though atelectasis and hypoxemia in the affected regions of the lung favor airway narrowing.

Of the findings on examination, hyperpnea is the most consistent, and often the most striking. Though increased physiological dead space is a factor, the mechanism of hyperpnea in man is unknown. Oxygen administration usually produces little effect. Fever, tachycardia, and tachypnea are frequent findings. Signs of venous thrombosis in the legs develop in less than half the patients, and may not appear until days or weeks after onset of cardiorespiratory or neurological symptoms. Jaundice is more often due to hepatic dysfunction than to hemolytic mechanisms, occurring most frequently in association with congestive heart failure or chronic liver disease.

While certain symptoms and signs in an appropriate clinical setting may strongly suggest the diagnosis of pulmonary embolism, these same findings may obtain in other diseases. To establish the pres-

ence of acute pulmonary embolism, or to rule it out, additional diagnostic aids are almost always necessary. The conditions presenting differential diagnostic problems most frequently are pneumonia, atelectasis, pericarditis, cholecystitis, dissecting aortic aneurysm, cardiac tamponade, acute myocardial infarction, and hyperventilation syndrome.

Appraisal of aids in diagnosis may begin with electrocardiography. In most cases, acute pulmonary embolism results in no definite electrocardiographic abnormality, and the transient nature of the changes, when they do occur, is characteristic. The electrocardiographic findings most commonly observed, namely sinus or supraventricular tachycardia, right axis deviation, right bundle branch block, and inverted T waves in leads V_1 to V_3 or V_4 may be helpful, but are all non-specific.

Elevated serum lactic dehydrogenase (LDH) along with normal serum glutamic oxalacetic transaminase (SGOT) and normal or elevated serum bilirubin favor the diagnosis of pulmonary embolism. However, LDH levels may not rise following embolism, and elevation is a non-specific finding, occurring also with cardiac failure, shock, pregnancy, liver disease, and after surgical procedures. In addition, LDH assay does not differentiate pulmonary infarction from pneumonia.

Chest roentgenographic findings may be suggestive of embolism, but are not often diagnostic. Before frank infarction develops, the chest film may show no abnormality. In some cases, enlargement of main pulmonary arteries or their major branches is discernible, with absent or diminished pulmonary vascular markings peripherally. The hemidiaphragm on the affected side may be elevated, due to atelectatic changes. Pulmonary densities appearing after infarction are typically subpleural, may be transient, are often associated with effusion, and most frequently involve the right lower lobe.

Scintillation scanning of the lungs, after intravenous injection of macro-aggregated human serum albumin particles labeled with I^{131} or other appropriate radioactive material, is a useful technique in the diagnosis of acute pulmonary embolic disease. Since most of these particles have a larger cross-sectional area than the average pulmonary capillary,

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they are trapped at precapillary level during the initial transit through the lungs, and the distribution of radioactivity reflects regional pulmonary blood flow. Thus, segments to which the blood supply has been interrupted by occlusive thromboemboli will appear as "cold areas" or areas of diminished radioactivity on the lung scan. This method is advantageous because it is virtually without risk, and lends itself well to the performance of serial observations. However, any condition leading to reduced or absent regional capillary perfusion may produce alterations in the lung scan so that reduced radioactivity over the site of a pulmonary infiltrative lesion on the chest film can be anticipated regularly, and provides no differential diagnostic information. The diagnostic potential of the scanning procedure is greatest when embolism is suspected, but there is little or no abnormality found on the chest film. Even under these conditions, "cold areas" may be found, particularly over lung bullae, in obstructive lung disease, or over the lower lobes with left ventricular failure. Conversely, in some cases little abnormality in the scan may be seen where thromboemboli produce partial but not completely occlusive lesions. Though cautious interpretation is required, the lung scan remains a very useful screening procedure in the diagnosis of acute pulmonary embolism, and once the diagnosis is established, may provide information regarding the course of the disease and response to therapy.

Visualization of the pulmonary vasculature can be accomplished by either selective or venous angiography. In patients with acute pulmonary thromboembolism, the chief angiographic findings are complete or incomplete obstructions of various pulmonary arterial branches, intra-arterial filling defects, decrease in volume of affected lung segments, and changes in arterial caliber proximal or distal to the obstructive lesions. In other cardiorespiratory diseases such as cardiac failure, pneumonia, pulmonary tumor, abscess, bulla, fibrosis or emphysema, the pulmonary arteries may be compressed, displaced, or attenuated, but remain patent to the subsegmental level, showing neither filling defects nor obstructive lesions. Thus it is the identification of specific structural changes within the pulmonary arteries that renders angiography the most definitive diagnostic method available. The decision to perform arteriography ultimately must be a matter of clinical judgment, based on the status of the patient, facilities available, and possible therapeutic implications. Angiographic demonstration of pulmonary thromboembolism would appear essential before pulmonary embolectomy, and highly desirable before interruption of blood flow through the inferior vena cava.

Hereditary Spherocytosis

(Continued from page 220)

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References

1. Clark, T. W. and Ewer, R. W.: Hereditary spherocytosis and polycythemia. *Arch. Intern. Med.* (Chicago) 115: 555-557, 1965.
2. Lipson, R. L.; Bayrd, E. D. and Watkins, C. H.: The postsplenectomy blood picture. *Amer. J. Clin. Path.* 32:526-532, 1959.
3. Biggs, R.; Denson, K. W. F.; Riesenbergs, D. and McIntyre, C.: Coagulant activity of platelets. *Brit. J. Haemat.* 15:283-296, 1968.
4. Hirsh, J. and Dacie, J. V.: Persistent post-splenectomy thrombocytosis and thrombo-embolism. *Brit. J. Haemat.* 12: 44-53, 1966.
5. Marcus, A. J.: Platelet function (in three parts). *New Eng. J. Med.* 280:1213-1220, 1278-1284, 1330-1334, 1969.
6. Emmons, P. R.; Harrison, M. J.; Honour, A. J. and Mitchell, J. R. A.: Effect of dipyridamole on human platelet behaviour. *Lancet* 2:603-606, 1965.
7. Sullivan, J. M.; Harken, D. E. and Gorlin, R.: Pharmacologic control of thromboembolic complications of cardiac-valve replacement; a preliminary report. *New Eng. J. Med.* 279:576-580, 1968.

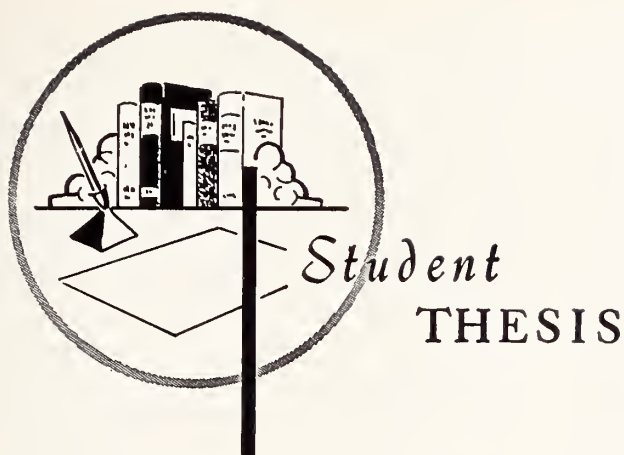
EATON LABS' FILM LIBRARY OFFERS PARKINSONISM TREATMENT FILM

"The Treatment of Parkinsonism with Levodopa," authored by George Paulson, M.D., has been added to the Eaton Laboratories Medical Film Library as part of the Eaton Medical Science Teaching Series, according to L. Eugene Daily, M.D., President of Eaton Laboratories. Dr. Paulson, Assistant Professor of Neurology at Ohio State University, has made "the first comprehensive film on the treatment of parkinsonism with levodopa," Dr. Daily said.

The film, a 14-minute, sound, color presentation, goes beyond the standard format of photos of the patient before and after treatment. Dr. Paulson has also included information on symptoms and biochemical aspects of the disease, prior treatment, the establishment of dosage schedules, and complications of therapy. Physicians interested in parkinsonism and its treatment will find this film helpful.

It may be obtained by writing to Eaton Medical Film Library, Eaton Laboratories, Norwich, New York, 13815, or by contacting any Eaton sales representative.

There is a great deal of difference between the eager man who wants to read a book and the tired man who wants a book to read.—Gilbert Chesterton



A Historical Development of Tuberculosis Chemoprophylaxis

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TUBERCULOSIS IS ONE of the oldest diseases of mankind. Until the introduction in 1946 of streptomycin into the chemotherapy of tuberculosis, little progress was made in the war on this disease. With the introduction of isonicotinic acid hydrazide in 1952, a new era of treatment dawned.

Much has been done to control and eradicate this disease in our country since that time. New developments, in the way of new chemotherapeutic agents, possibly offer still more effective means of controlling tuberculosis.

A review of much of the pertinent literature is made, revealing a relatively simple regimen to significantly reduce the incidence of the disease and the danger to those already infected. Most animal studies are not included because of questions of applicability of results to humans, and most importantly because many of the observations in question have since been made in humans.

Side effects are shown to be minor; the major difficulties are the approach to the individual patient and the social factors involved.

The historical development of isonicotinic acid hydrazide (isoniazid, INAH, INH, INA, Rimiphon) began when it was first reported in the medical literature in 1952 in the works of Grunberg

and Schnitzer, Selikoff and Robitzek, and Ornstein. They tried doses from 1 to 10 mgm per kgm per day and found evidence of side effects related to the central and autonomic nervous systems—especially with the isopropyl derivative. They observed a "definite and important chemotherapeutic effect" which was "rapid" and "to a degree . . . never observed in other chemotherapeutic or antibiotic agents" with the absence of "significant side effects." Rimiphon (INH) was the most therapeutically effective.

Early trials by the British Medical Research Council (BMRC) showed INH to be highly effective, but no more so than PAS-Streptomycin in combination; but concluded that INH should not be used alone because resistant organisms appear rapidly.

In Madras, India, an extensive study was done with INH in active tuberculosis treatment, where it was shown to be less effective alone than in combinations, but that it had a definite effect. These findings were confirmed at five years by a re-evaluation of the patients and results, and were very important in laying down the basis for chemoprophylaxis. "It may be advisable to give antituberculous chemoprophylaxis to *all* young household contacts of newly diagnosed sputum positive patients living in overcrowded urban conditions for a minimum of six months and INH may be used alone if a suitable companion drug is not available."

Other important findings from Madras are that the peak concentration is more important than sustained serum/tissue levels, and that a second year

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of INH is more beneficial in "closed negative" cases than in "open negative" cases where it had no effect. It was also shown that pill-taking was not important by confinement in a sanatorium, and that it is not affected by pill size, taste, shape, or by side effects.

Events in the United States started, as already seen, in 1952. In that year both Hoffmann-La Roche and Squibb drug companies came out with publications on animal experiments with INH and related compounds, which exhibited "marked antituberculous activity." Side effects were in general discovered at least potentially in these early studies. An important finding was that INH enters cells and has its full antituberculous activity. It was found to be safe, at least for short periods of time in humans, and it was found that cerebrospinal fluid levels are reached rapidly.

The Trudeau Society, now the American Thoracic Society, quickly reviewed the findings and reported that toxicities seemed to be of little significance or seriousness, but warned against indiscriminant use of INH. Steenken and Meade, as early as 1952, warned that INH alone did not appear to be adequate therapy for cavitated tuberculosis which corresponded with the findings of the BMRC studies.

The U. S. Public Health Service series showed INH alone to be less effective for *treatment* of active tuberculosis than combinations, but safe and effective. Then the work of Lincoln with children was introduced, which showed that INH "cures" the hematogenous lesions and apparently prevents the development of clinical tuberculous meningitis, the complications of childhood primary tuberculosis. At this point in the history of INH, the USPHS trials were begun. These trials were carefully designed, utilizing a double blind technique and a specially manufactured placebo to test the potential of INH as a chemoprophylactic agent.

The first trial was done with 2,750 children, beginning in 1955 and ending in 1957. Randomization produced two comparable groups. The INH group took 4 to 6 mgm per kgm per day of drug; this group being composed of 1,344 participants compared with 1,356 placebo patients. The plan was to follow these children until they were 20 years old. In case of deterioration, the attending physician was not told which medication the patient was taking until the decision to treat or not was made. It was calculated that 93 per cent of the children took the pills for at least six months, and 72 per cent completed the entire year. During the medication year, six of the INH patients developed tuberculous complications compared with 33 of the placebo patients. At the end of three years, 95 per cent of the children were re-examined. Two hundred thirty-seven "difficult to evaluate" patients were referred to a special board which decided one hundred fifty-

three showed unfavorable changes in their tuberculous status, and 84 showed no change. Of the 88 children with definite adverse pulmonary changes, 76 were unequivocal—30 in the INH group, and 46 in the placebo group.

This study confirmed that the risk is proportional to the degree of x-ray involvement and inversely related to age. The authors stated that INH did prevent tuberculous complications, not just suppress them. INH reduced the number of complications by 85 per cent.

The next in the USPHS trial series was among Alaskan villagers whose annual infection rate by skin testing in 1957 was eight per cent. In the years from 1949 to 1952 the conversion rate had been 25 per cent. Ninety-five per cent of the 7,333 study population was Eskimo, and only 35 per cent were considered non-tuberculous. About 60 per cent took their medication throughout the year. About 25 per cent were excluded—the most common reason being that they were under treatment for active tuberculosis. The remainder were randomized into groups of 3,017 on placebo and 3,047 on INH. A 68 per cent reduction in incidence of new active or newly reactivated cases was shown by the INH group over the placebo group. It was found that the risk was greatest in those with abnormal chest x-rays. Evaluation after 43 to 76 months of observation showed there were 284 deaths—seven placebo patients and three INH patients due to tuberculosis. Six years after the medicine year, 84 per cent of the cases of active tuberculosis that developed were in those with initially positive skin tests (greater than 5mm to 5TU of PPD-S), a case rate 2.5 times greater than for negatives. After the first four years of followup, eight cases of active tuberculosis were found in the INH group compared with 33 in the placebo group. The conclusion drawn was that INH appeared to have been effective in preventing both reactivations and development of new disease. It was furthermore decided that "a little INH is better than none at all" based on the finding that only 30 per cent of the patients took 90 per cent of the prescribed dose.

The third USPHS trial involved mental institution patients. The placebo group originally consisted of 13,517 patients, but only 12,326 took the placebo. The INH group was composed originally of 14,407 patients, of which 12,884 took only INH (discrepancies due to use of the ward as the unit of randomization and transfer of patients for medical or psychiatric reasons). About 60 per cent of the INH group took their medication 47 weeks or more compared with nearly 70 per cent of the placebo group. In the medicine year (15 months after the start of the trial) 21 cases of active disease—20 pulmonary—were found in the placebo group com-

pared to three in the INH group (1.7/1,000 to 0.3/1,000). There were an additional 14 abnormal chest x-rays in the placebo group (13.1/1,000) compared to three in the INH group (2.5/1,000). Skin test conversions occurred in seven placebo patients (1.1/1,000) and in *no* INH patients. In the placebo group there were no cases in those who were initially skin test negative. All three of the INH patients who had active pulmonary disease had been treated prior to the onset of the trial for their disease—these patients were also found as a group to be poor pill takers. The only case of bacteriologically positive tuberculosis which had INH resistant bacilli was in the placebo group.

After the medicine year, 30 placebo patients (four had been treated prior to the trial) and 15 INH patients (three treated prior to the trial) developed active disease. It was found that the initial infection status is the most important single factor associated with the later development of active tuberculosis. It was calculated that while INH was being taken, it prevented three fourths of the cases that otherwise would have developed among the patients in this study population.

The next USPHS trial was among contacts of new cases and involved 5,677 index cases—5,047 active pulmonary disease cases—and 29,087 contacts in 6,219 households. Of these, only 25,033 contacts in 3,127 placebo families and 3,092 INH families were considered in the compilations. About 65 per cent of each group took all of the prescribed medications. In the placebo group, 80 per cent took 75 per cent of the prescribed dose compared to 77 per cent of the INH group. Six per cent of all who entered the trial quit taking pills because they moved out of the household.

Primary tuberculosis was found in 16 previously uninfected placebo patients compared with five INH patients. INH had no effect on the number of cases detected during the medicine year among those infected at the start of the trial—13 placebo and 17 INH. There was an equal number (six) of primary tuberculosis cases found in each group after the medicine year. Extrapulmonary tuberculosis was found in sixteen placebo and four INH patients during the medicine year—confirming the effectiveness of INH in this respect. After the medicine year, two cases of extrapulmonary tuberculosis were found in placebo patients and one among INH patients. Sixty-two placebo patients and only 14 INH patients developed pulmonary tuberculosis during the medicine year. In the next year, 17 placebo and ten INH patients developed this disease. According to the review board's opinion, only six placebo and seven INH patients developed pulmonary tuberculosis in the year after taking medication, demonstrating no lasting effect of INH therapy.

It was felt that these studies confirmed the concept that the family is the important epidemiological unit in development of tuberculosis; and that adults are the most significant segment, both as sources of infection and as victims. The authors concluded that the major risk among household contacts is during the first year after the diagnosis of the index case. These findings were reported earlier in the Madras studies where even though the patients lived under extremely poor conditions, they were not at an increased risk of infection after adequate treatment of the index case(s) was started. In both sanatorium and home treated groups, the attack rates (skin test conversion) were similar and infants and children were at the greatest risk. The Madras studies likewise showed the greatest risk to be before initiation of treatment of index cases and in the first three months after initiation of treatment. These results were further confirmed after a five year follow-up period.

The last of the published USPHS trials was done in 910 households of 802 index cases including 3,138 eligible members who were categorized as "contacts of known cases." They were studied with the usual physical examination, skin tests, chest x-rays, and the usual followup program. Of the 2,824 who participated, ten were found to have active disease (3.5/1,000) compared with 19/1,000 in contacts of new cases—these were treated actively. Of the other 2,814, 1,463 received 5 mgm per kgm per day of INH and 1,357 received placebo. Fifty-five per cent of the contacts were uninfected (PPD-S reaction less than 5 mm induration). Forty-eight per cent of the placebo group and 46 per cent of the INH group took their medication for one year as directed. During the medication year, nine placebo and three INH patients were considered active. In the postmedication year, three of each group were considered active (the figures cited indicate only trends and are not statistically significant). The authors concluded that in this group of patients, a course of prophylactic INH to at least the tuberculin positive contacts of known cases appears to be justified. The risk appears to be the same whether the index case(s) is/are active or inactive, indicating that the new cases were the result of infections previously acquired.

Curry studied the effectiveness of INH prophylaxis in prevention of tuberculous morbidity among reactors first discovered in a skin testing program in San Francisco school children. His groups were selected by those who accepted medication for one year compared with those who refused. Of the 285,277 children tested, there were 11,567 positive reactors (4.5 per cent). The 7,465 of these followed by their private physicians were not included in the study. Of the 4,100 studied, 2,910 accepted INH

and 1,192 refused. Over 95 per cent took their INH regularly. The dosage schedule was 10 mgm per kgm per day, not to exceed 300 mgm daily. Converters were classified as those who had documented negative skin test within two years of entering the study. The one INH patient who developed tuberculosis was a converter (19 mm of induration) and had three, one month lapses in treatment; and was furthermore considered poorly cooperative (0.34/1,000). In the untreated group there were 25 cases of tuberculosis, four in converters and 21 in reactors for a case rate of 20.9/1,000, or a 61 times greater risk than the treated group.

Relating the development of tuberculosis to skin test conversion, Curry found that only 1/423 INH patients were converters, while 4/47 untreated patients were converters. Teenagers with reactions of 15 mm or greater are at a 4.8 times higher risk of developing clinical tuberculosis. He attributed the prevention of about 60 cases in the treated group to INH—a tremendous saving to the community.

In studying activation of arrested tuberculosis, Comstock reports 12 per cent of whites with minimal arrested tuberculosis and 15 per cent having latent apical tuberculosis become worse in a three year period (figures from five to 15 per cent are reported for similar studies depending on the group studied). He also reports that most activations are acute and recommends followup every three to six months for the first few years, then annually for life.

Katz studied the effect of INH upon the frequency of reactivations of inactive tuberculosis and the feasibility of large scale use to reduce the reactivation rate in a population of mental hospital patients. There was no placebo administered to the control group. Of 513 patients, 247 took INH and 266 served as controls. INH was administered for two years as no statistical significance was found at the end of one year. The patients were observed for three and one-half years. In that period of time there were three times as many activations in the control group as in the INH group. Although new cases had a higher reactivation rate than old, both categories benefited from INH. The 61 per cent reduction of reactivations is statistically significant.

Katz's first conclusion was that to work with the entire population was not feasible; but that high risk groups would be worth the effort and expense. A followup study of this group showed rapidly diminishing returns—the prolonged prophylactic effect lasted about two years after two years of drug administration. The authors concluded that in their opinion, it was still impractical to search for all inactives—even for one year of treatment.

In Japan, Bush and Brown, using the USPHS

protocol, studied household contacts of known cases (active cases excluded). There were 650 index cases with 2,295 contacts—2,238 of which were actually studied; 1,096 taking placebo and 1,142 taking INH. Slightly more than 50 per cent of placebo patients took all of their pills and slightly less than 50 per cent of the INH patients took all of their pills. Eleven placebo patients developed active disease compared with eight INH patients—none were considered old cases (developed in the first three months). The results were, therefore, that INH provided no significant protection in this population.

A study from Kenya using INH in a dose range of 5 to 10 mgm per kgm per day for contacts of active cases utilizing the family as the unit of randomization and using "identical" placebo tablets for at least one year—longer if the index case was still active (treated with INH and PAS), showed that nearly two thirds of the conversions were in the first three months—this group was comprised of about 13 per cent of the control group and about six per cent of the INH group. While approximately 40 per cent of the control group eventually produced positive cultures, no INH patients did so. Development of pulmonary lesions (active and inactive) occurred in over 21 per cent of the control group, but in *none* of the INH group. The conclusions drawn from this study were that INH demonstrated a considerable prophylactic effect and could reasonably be used for household contacts in deprived countries.

Chemoprophylactic trials in Greenland included the entire adult population (14 years or older). Most children (less than 14) had received BCG and were excluded. Due to an infection rate of 20/1,000, secondary chemoprophylaxis was the primary goal. Seventy-nine villages along the west coast were included in the study—using the village as the unit of randomization. A placebo pill was used which contained a nonpharmacological dose of INH. The majority of participants on INH received 400 mgm daily (6 to 7 mgm/kgm/day); but a small group took 600 mgm daily. Medication was taken for three months, stopped for three months, and then taken for three more months; with a total dose of INH only one fifth that used in the USPHS trials. The active disease rate was 29 per cent lower in the INH group with virtually no prophylactic effect demonstrated in younger adults (15 to 24 years old), and only about half the effect in those who were suspicious on entrance to the trial. The authors concluded that INH had both an initial and a prolonged effect although the latter decreases with time; and that the use of INH in a healthy population has reduced the risk of developing tuberculous disease.

One of the major questions seems to be, "Is eradication possible and is it feasible?" Myers has stated that "eradication will not occur as all active infectious cases cannot be treated at the same time." An additional factor is that at least eight per cent of new cases in the U. S. are primarily resistant to treatment. The first question can be definitely answered *yes*, but it may take centuries. Complacency is the major block to effective eradication. To those afflicted with this malady, it is important to realize that "Tuberculosis still incapacitates and kills more people in the world than all other communicable diseases combined."

Ferebee, in discussing the USPHS trials in relation to these questions, concludes that chemoprophylaxis is worth the trouble and outlines a plan for its execution. In 1955, Livingston expressed his view thusly, "Preventive medicine does more in the eradication of tuberculosis than the puny efforts of the clinician in dealing with the sick." Although probably not entirely true in 1969, this statement still has merit.

Side effects of drugs always draw a lot of attention; INH is no exception. In many instances we use potent poisons to treat man because the indications outweigh the contraindications. INH has been subjected to many trials, primarily because of the dispute over the efficacy of chemoprophylaxis.

The USPHS trials showed the incidence of side effects to be about 0.4 per cent—subtracting reported side effects of placebo from that of INH. The most common side effects in these trials were nausea, dizziness and skin rash; peripheral neuritis was not observed. There are essentially no side effects in the dose range 200 to 300 mgm daily. Perera and Cowley recently reported the incidence of side effects to be 0.0 to 0.1 per cent in the usual dosage range unless there is a vitamin B-6 (pyridoxine) deficiency, epilepsy, or psychosis. On a temporal basis, but unproven, an 0.8 per cent incidence of side effects was found while most subjects were on other medications as well. In discussion of this paper, comments were made that an impurity was found to be the cause of the frequently reported hepatitis.

Goodman and Gilman published an extensive list of reported side effects, but do not give a clear idea of the frequency of each. The majority of reported side effects are related to the nervous system which is not too surprising since INH was initially discovered in relation to its isopropyl derivative which was the first MAO inhibitor used in psychiatry. At any rate, peripheral neuritis, convulsions, somnolence in epileptics on anticonvulsants and optic neuritis followed by atrophy have been reported; as have muscle twitching, dizziness, ataxia, paresthesias, stupor and toxic encephalopathy.

In the Madras studies, peripheral neuritis was found to occur in three per cent of rapid inactivators and 20 per cent of slow inactivators; and this side effect was considered the major drawback to the use of INH. It has been found to be dose related. Administration of 6 mgm of pyridoxine has been found to eliminate this and most neurological side effects. Although pyridoxine has a competing inhibiting effect *in vitro*, this is found to be insignificant *in vivo*. This side effect becomes more common with increasing age. In the Greenland trial the incidence of side effects was found to be insignificant.

The observed effects on diabetes has been found to be due to the effect of INH on the toxic state with improvement of the patients general well being; and its anabolic effect has been found to be due to this, and is not a primary effect of INH.

Drug fever has been found and is believed to be a very rare allergic reaction. Although, as a class of side effects, allergic reactions rank second to central nervous system effects. INH has been shown to have no effect on EEG or psychometric testing, and its psychotropic effect is again attributed to its effect on the toxic state.

Pathologically speaking, INH has been observed to change the microscopic appearance of the granuloma, indicating an altered tissue reaction in pulmonary tuberculosis treated with INH. There has been expressed concern that INH might be a carcinogen based on observations of certain animal studies. This has been, for all practical purposes, found to be not true in humans as shown by Kerby and Stead in a study of Milwaukee area patients. Gastrointestinal side effects are considered minor—the most common being nausea.

In concluding the discussion of side effects, "The value of any drug in any disease must be judged by the relationship between its therapeutic effectiveness and its tendency to cause toxic reactions." In all, the most striking attributes of INH are: absence of serious side effects, ease of administration, inexpensiveness, high degree of activity, and specificity.

The significance of rapid versus slow inactivators of INH was raised by Bush and Brown. This has been investigated in Japan, Alaska, and Madras, India, and has been found to be an insignificant therapeutic consideration, except as mentioned above in the section on side effects. According to the Madras studies, rapid inactivators require a dose one and one-half times that of slow inactivators to achieve the same serum concentration. The mean inhibitory concentration has been reported most consistently to be 0.2 microgram per milliliter of serum.

The ratio of rapid to slow inactivators varies with the population according to racial backgrounds. An interesting finding in the Madras studies was that

PAS elevates the peak concentration of INH, the critical value of which seems to be about three micrograms per milliliter. A low peak serum concentration may be related to the emergence of resistant organisms. At any rate, the peak serum concentration is more important than maintaining a sustained inhibitory concentration, and is one of the discoveries which lead to a single daily dosage schedule.

In the light of the side effects discussed above, it has been repeatedly stated in various ways that the efficacy and safety of INH is demonstrated convincingly in so many trials including Veterans Administrations, USPHS, and BMRC among such diverse populations and age groups that it can be used with confidence when indicated.

The rationale of chemoprophylaxis arose from the above cited trials and the knowledge that INH is primarily effective only against living—dividing—tubercle bacilli. Chemoprophylaxis is, therefore, the treatment of tuberculosis which is *active*, but not to such a degree that we can document by our usual methods with bacteriological and x-ray studies. In these cases, the number of organisms are thought to be low enough that natural defenses can handle those unaffected by INH—the basic principle of pre-drug treatment.

Chemoprophylaxis is also based on the premise that it is cheaper to prevent a disease than to treat it. INH has the qualities of an ideal chemoprophylactic agent: safe, cheap, effective, and easy to administer.

In underdeveloped countries, use of a single, effective, cheap, easy to use drug is a must. Support for INH has been found in Kenya and East Africa where little benefit was obtained by increasing the dose from 200 mgm daily to 20 mgm per kgm per day with pyridoxine, and the Madras studies enumerated earlier. Using this drug which has the desirable qualities in a dose low enough to avoid the necessity of adding expensive vitamins is also an important factor—if such a dose is effective. It is reported by USPHS workers that a dose of 3 mgm per kgm daily is as effective as 10 mgm per kgm daily and is appreciably less toxic “in treatment of active disease in combination.”

The cost of distributing INH from an already established contact program is very little. The less-than-a-cent-a-day cost of an adult dose of INH (300 mgm) is probably lower than that of any equally potent drug for any disease.

In Curry's San Francisco study, the estimated savings in hospital care alone (by avoiding 60 active cases) was more than three times the cost of the INH prophylaxis program—treating about 3,000 children for one year.

Herbst reports that through elimination of part of the unnecessary hospital expense of advanced cases—medical and surgical—and diversion of manpower, efforts, and finances to care of outpatients, part of the one billion dollars America spends to “maintain tuberculosis because we have not accepted the facts that tuberculosis is a preventable disease . . . could be saved.”

The dosage used for chemoprophylaxis in the United States is 5 mgm per kgm per day up to 300 mgm daily for adults, and 10 mgm per kgm per day up to 300 mgm daily for children; given in one daily dose for 12 months. These dosage schedules have been determined on the basis of effectiveness and safety. Children are much more tolerant of higher doses. This higher dose is based on the danger of post-primary complications in children.

The social and psychiatric problems included in chemoprophylaxis are probably the most exasperating parts of a program. Starting with the adage, “You can lead a horse to water but you cannot make him drink,” it becomes clear that no matter how good an agent we have, if the patient will not take it we can do him no good. This is often a problem with INH because the people who need it often do not feel sick and will lose interest or quit taking medication, with the appearance of the most minor or imagined side effect. Expression of interest and concern for the patient plus patience are probably the best tools to use with outpatients. As was shown in Madras, institutionalization does not improve medicine taking after release. It was also found that the properties of the pill itself and dosage schedules have little to do with regularity and continuity of pill taking.

On the possibility that if water is available, one might drink it, Curry established “neighborhood clinics” after investigating reasons why patients did not attend his regular clinic. The reasons were found to be social and ethnical in origin. The importance of intensified public health nursing service and followup care in “neighborhood clinics” probably lies in the qualities mentioned above—interest and concern, and seeing the same person each time. The Madras studies also showed that institutionalization caused a major social problem by disruption of the family life—often taking the “breadwinner” out of the home; whereas in the home treated group, the patients often functioned better after initiation of treatment, resulting in an often improved social situation.

What kind of conclusions can be drawn? One—tuberculosis is a problem in the United States and the world, although much less of a problem in the former. Two epidemics of tuberculosis were report-

ed in the United States in 1968 in Morbidity and Mortality Weekly Report; each involving teachers and their pupils and friends. Further risk with increased risk of resistant organisms is present from our military involvement in Southeast Asia.

The presently accepted indications for chemoprophylaxis in the U. S. have developed over the years, and have evolved into a rather well supported set of guidelines. The compilation may be found in the literature as reported by the Ad Hoc Committee on Chemoprophylaxis of the National Tuberculosis Association.

Active disease must always be ruled out first, and if it is found, must be treated as such. All positive reactors—10 mm or more of induration to 5 TU of intradermal PPD-S should be treated when identified. Positive reactors among children and adolescents should always be treated. Any known convertor of any age should be treated.

Certain patients with known inactive disease also deserve priority. These include ex-patients who received no or inadequate drug therapy; and persons with x-ray findings consistent with healed adult type pulmonary tuberculosis, and a positive tuberculin test. According to Stead, about five per cent of calcified primary lesions contain viable tubercle bacilli; and 40 per cent of apical lesions do, although this is an area of considerable dissention.

Special situations deserving INH chemoprophylaxis are those with positive tuberculin skin tests who satisfy one of the following criteria: placed on steroid treatment; has a gastrectomy; has a reticuloendothelial disease; has a period of instability of diabetes; has a pneumoconiosis; or in the case of a pregnant woman, has "inactive disease," and has been previously untreated with chemotherapy. In the latter case, INH should be started in the last trimester and continued for one year. A short eight weeks course of INH should be instituted in positive reacting children who develop measles or pertussis if previously treated; otherwise, a one year course of prophylactic therapy is advised.

In contacts of active cases with skin tests of 5 mm or more, INH should be given for one year. Negative reacting contacts should be retested every three months at least one time and should be treated if conversion occurs.

Techniques of skin testing are outside the scope of this paper. Basically, except in contacts, 10 mm of induration to 5 TU of intradermal PPD-S is used as the minimum positive reaction. Conversion to positive is the most important finding in skin testing. About 25 per cent of reactors with primary tuberculosis will show bacterial confirmation. Although skin testing is not 100 per cent specific for any one

mycobacterium, reliability can be augmented by dual testing, using an atypical antigen as well as mycobacterium tuberculosis PPD. Local sensitization from previous testing may interfere, and particularly in elderly people, a skin test might have a "booster effect" which, although the first test is read as negative or less than 10 mm, a repeat test may be very large. In very ill or toxic patients, a false negative may be read until improvement in their general condition is made. Contrary to some reports, INH has no effect on the size of a skin reaction with the exception of systemic toxicity. Mohr warns that blood transfusions from positive to negative reactors may convert the recipient's skin test reaction—these people do not need chemoprophylaxis if this can be documented as the etiology of the conversion. Commenting on the feasibility of mass skin testing, Katz, as cited earlier, felt it to be only worthwhile to investigate high risk groups. Curry demonstrated the value of routine skin testing of all school children.

The development of new agents like *Rifampin* which appears to be as safe, effective and easy to administer as INH are hoped to fill in the gap in chemotherapy and possibly may be found to have a role in chemoprophylaxis.

Programs designed to detect tuberculosis in its early stages will have a definite effect on morbidity. It is reported that five per cent of tuberculosis discovered in 1960 was first diagnosed when the patient was dying of the disease. This statistic has remained remarkably constant.

In conclusion, INH is found to fulfill the criteria of an "ideal" prophylactic agent. The majority of side effects reported are insignificant and generally are not contraindications to its use if the proper indications are present. Physician and patient complacency are major stumbling stones to successful chemoprophylactic programs with social and psychiatric aspects being of prime importance. Although new agents—like *Rifampin*—are attractive and provide "new hope," *effective use of INH* will accomplish much toward the eventual eradication of tuberculosis.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 1300 Topeka Avenue, Topeka, Kansas 66612.

We look upon handicapped workers just as we look upon any other group that suffers from prejudice, discrimination and inadequate opportunity. We want to help them win their full status as productive citizens. . . . George Meany, President, AFL-CIO.

The President's Message

By now you have received my first "President's Letter." As you know, this will be devoted to specific reports on what has been done and what we know about the current or proposed activities of our Society.

I plan to use my privilege of the JOURNAL in evaluating broad concepts of the total aspect of health services.

The details of my plan for this year are printed elsewhere in this issue under my report to the House of Delegates. Please survey this to understand our common goal for this year.

You have also received by mail a report of the decision of your Executive Committee regarding Resolution 70-64 concerning the legal status of our Society.

Medicine is at the crossroads. Either we lead—or we follow. I feel that most of the actions taken at our recent meeting were constructive in nature and begin to demonstrate the leadership that I feel the Kansas Medical Society should assume.

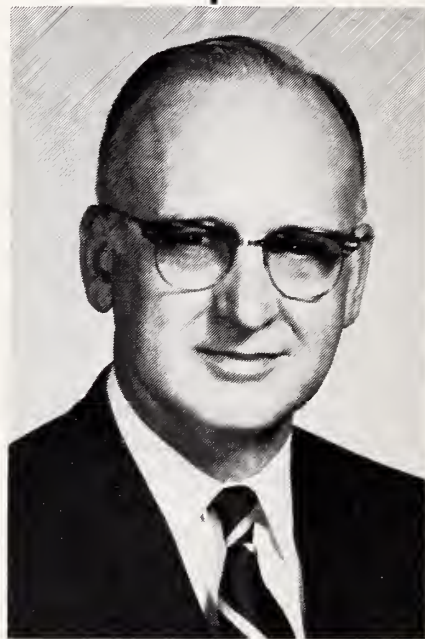
There are two ways to look at our present situation. We are either on the Brink—or on the Threshold. To me, we are on the Threshold and we have the opportunity to demonstrate our leadership.

To help us in our united effort to lead, I propose we chart a course of Action:

- A—*Apply* our awareness and knowledge of problems to recommend our course of action.
- C—*Communicate*—an informed Society is essential.
- T—*Teach*—professional and non-professional areas.
- I—*Involve*—enthusiastic involvement in helping to determine the course of delivery of health care services.
- O—*Organize*—effective organization involves us all.
- N—*Now*—do it all now!

Together we can go a full cycle of progressive, constructive action.

Change means Movement;
Movement means Friction;
Friction means Heat;
Heat means Controversy;
Controversy means Growth;
Growth means Life;
Life means Change.



A stylized, handwritten signature in dark ink, reading "Francis J. Collins". The signature is fluid and cursive, with a large, sweeping "F" and a distinct "M" at the end.

President



Reflections of the New Editor

DAVID E. GRAY, M.D.

With this issue of the JOURNAL, a change in editorship occurs, a fact which may have escaped most readers except those addicted to the reading of fine print generally reserved for insurance policies, electric blanket warranties and cigarette packages. It is probable that the change in the masthead will be the total discernible change in the state's leading medical journal for a time. For one thing, the incoming editor, having had a peripheral part in making the JOURNAL whatever it is, knows better than to incur the displeasure of his fellow board members by immediately advocating a lot of new orchestrations just because a game of musical chairs has put him at the head of the table. For another thing, being an accomplished inactivist, he's not all that teeming with ideas.

Having greatness thus thrust upon him, however, did stimulate some reminiscing about his predecessors with whom he has had more or less intimate acquaintance. He knew Earle Brown as an able and astute public health administrator, so able in fact that he went on to a bigger job in the East (well, isn't everything bigger in the East?) so long ago not many readers will recall his days here. He was followed by W. M. Mills who must be looking down on this whole medical world with the red in his neck getting higher and deeper all the time. As a sort of second son of that gentleman, the incumbent can testify that his written word could never match the potency of

his terse and tart spoken word because you could never put the twitch of that eyebrow on paper.

Luke Pyle took over from him, thereby acquiring another event in his decathlon of state medical jobs. Compared to Merrill Mills, Luke is loquacious, but still somewhat this side of a chatterbox. It would be difficult to find a greater ability to digest a mass of information, thoughts, ideas and facts down to the most succinct statement—and when he rises to say, "Well, I think you have two or three things to think about," you'd better start thinking.

The warmth of the editorial chair at the moment is, of course, due to its most recent occupant, Orville Clark. The precision and organization of this artist-musician-scholar have put a polish and tone on the JOURNAL which may not be apparent until abraded by the new editor who is not noted for those characteristics. The editor and readers can share gratitude for the continuation of the Editorial Board which will pursue the same upgrading efforts of the past. One thing about having a deaf editor—nothing will be done that isn't repeated at least twice.

Dr. Mills once remarked that when he read something in the press of which he knew the facts, and saw how far the story missed the facts, it made him suspicious of all the other stuff he didn't know about. The editor assumes as his initial obligation the effort to allay any such suspicions about the JOURNAL.

Official Proceedings

1970 Meeting of the House of Delegates

Transactions of the 111th Annual Session of the Kansas Medical Society are published in this issue of the JOURNAL. During the first session the chairman of each of the five commissions made his annual report. Resolutions not previously published in the JOURNAL were introduced. All resolutions were referred to Reference Committee A (William R. Roy, M.D., Topeka, Chairman), or Reference Committee B (Evan R. Williams, M.D., Dodge City, Chairman).

The resolutions appear in numerical order under the minutes of the second House of Delegates. Printed in their entirety are those resolutions which passed and those referred back to committee for further study. Those failing to pass are retained in the minutes at the executive office, but are not recorded here.

FIRST SESSION

The first meeting of the House of Delegates was called to order by the Speaker, Dr. Thomas F. Taylor, at 2:30 p.m. on Sunday, May 3, 1970, at the Broadview Hotel, Wichita.

Dr. Taylor announced that more than 100 delegates had registered, which constituted a quorum.

The Speaker called upon Dr. Emerson D. Yoder, Secretary, for the minutes of the previous meeting. Dr. Yoder stated that these had been published in the JOURNAL and moved the reading be dispensed. This was seconded and approved by voice vote.

The primary election was held for the office of second vice president. Dr. Thomas F. Taylor was nominated from the floor for the position of second vice president. Nominations were taken from the floor for the offices of speaker and vice speaker of the House of Delegates. The election of officers for all positions will be held at the second meeting.

The Treasurer's report was given by Dr. Chester M. Lessenden, Jr. He called attention to several items on the financial statement and said, for the first time in a long period, there appears to be sufficient money to do what the Society wishes.

Dr. James A. McClure, chairman of the Advisory Committee to Welfare, reported on the activities of his committee, stating that real economies have been achieved through utilization review. He recounted the legislative problems that arose with reference to welfare and recommended that the Society work closely with the special joint legislative committee studying welfare.

REPORT OF THE CONSTITUTIONAL SECRETARY

Following is a summary of the membership of the Society for 1970.

Dues paid members	1,436
Delinquent members	259
Emeritus members	121
Personal exemption	18
Retired members	34
In-service members	11
Leave-of-absence members	39
	<hr/>
	1,921

The membership in 1969 was 1,909. The 1970 membership represents an increase of 12 members.

SPECIAL REPORTS

The Editor

On this occasion I come before the House of Delegates to report to you about the JOURNAL for the 18th time—a longer consecutive tenure of the position than any of my predecessors have enjoyed. It seems an appropriate time for a careful look at the advisability of a change, and after considerable careful thought, it is my opinion that I should at this time end my term as editor. I must confess that there are some regrets in doing this, but I am convinced that the best interests of the Society will be served by a change at this time, and hence request that the Council, at its meeting following this annual session, select a new editor. There are some personal factors which enter the picture, but these do not need to be detailed here.

The financial information supplied to you shows that the JOURNAL again had a deficit for the past year's operations. As was the case last year, we do have the reserves accumulated from prior years which have carried the JOURNAL along without additional Society support, but the fact remains that the income from advertising and from subscriptions at the present rate does not pay for the JOURNAL's publication. The prospect for the immediate future seems no better, as the advertising dollars are being budgeted carefully by all the prospective advertisers. The total receipts of the Bureau (State Medical Journal Advertising Bureau) for 1969 were below those of 1968, which shows that this is not a local problem, but one which most of the state journals are facing, and probably some

others as well. We are grateful that we do have the reserve on which we can call.

A year ago I reported to you that we were contemplating offering the JOURNAL to residents in the hospitals in Kansas who wished to have it, and this has been done. In addition to the University of Kansas Medical Center, the residents of Bethany Hospital in Kansas City, and of St. Francis and St. Joseph's hospitals in Wichita are all receiving free copies of the JOURNAL. This makes a total of 281 copies which are distributed to the residents. We consider this a good investment, and hope that it is useful to them. Perhaps it may help to persuade some of them to remain in Kansas.

During the last year we have been publishing a group of papers on cardiology, which are supplied by the Kansas Heart Association. The papers are clinically oriented, and we believe they should be useful to you.

My term on the Board and that of Dr. Greer, expire during this annual session, and it will be the duty of the Council to fill these vacancies.

On this occasion of my last appearance as your editor, I hope that I may be pardoned for indulging in telling you some of the history of the JOURNAL which I discovered during my perusal of some of the older copies.

It is a generally accepted idea that secretaries and editors go on and on in their respective jobs, much longer than do other officers of organizations. My study of the tenure of previous editors of the JOURNAL would confirm this impression. During the 70 years of the existence of the JOURNAL, there have been only nine editors, and three of us (W. E. McVey, W. M. Mills, and I) account for 50 of the 70 years! In looking over the accomplishments of my predecessors, I feel that I have been honored to be included among such an illustrious group, even though I do not conform to the mold. One became the dean of the new medical school of the University of Kansas. All the others were at one time president of the Kansas Medical Society, and one became lieutenant governor of the state.

The JOURNAL was first published in 1901, and logically, under the leadership of W. E. McVey, who was the real father and also the obstetrician for the new infant. He was editor the first year, then for the following two years a joint-editor with J. W. May. He became president of the Kansas Medical Society in 1903-04. Dr. McVey must be considered one of the giants of the Society by almost any standards, for he was one of the men who was a tireless worker, and was an influential force in the organization for many years.

In 1903, George H. Hoxie became editor, and his term continued until 1907, which was two years

after he had been appointed dean of the new medical school of Kansas University. Charles S. Huffman followed from 1907 to 1909. He became president of the Society in 1917-18, and was lieutenant governor of Kansas in 1919-1923.

In 1909, Dr. May returned to an active role, and was editor from 1909 to 1914, and he became president of the Society in 1916-17. Dr. McVey returned to his former job as editor in 1914, and continued until his death in 1931, a period of 17 years in addition to his earlier service.

After the death of Dr. McVey, O. P. Davis, who had been president of the Kansas Medical Society in 1910-11, was editor for a short period of three months, followed by Earle G. Brown, for the two-year period of 1932-34. Dr. Brown had been president of the Society in 1927. Next was W. M. Mills, who accepted under pressure, but "only until they found someone else"—a search (or was there really any search?) which lasted for 12 years until he became the Society's president in 1946. Lucien R. Pyle succeeded as editor from 1946 to 1952, when he resigned, becoming president-elect, then president in 1953-54. Then followed the beginning of my 18 years.

The tenure of the members of the Editorial Board is similar: I have been on it for 24 years; Richard Greer for 21; David Gray for 18; John Segerson for 14. The other member, Donald Pierce, is a more recent arrival, but he replaced Dwight Lawson who had been on the Board for 20 years. It would seem that reappointment to the Editorial Board is rather a standard procedure, but it also demonstrates the willingness of these men to continue in their work for the Society.

At the beginning of my editorship, in 1952, the annual session was being held in Kansas City for the first time in many years, as the beautiful new Town House Hotel had just opened. W. Clarke Wescoe was the newly appointed dean of the University of Kansas School of Medicine, and Warren Bernstorf was the incoming president of the Society, following Clarence Benage.

The annual session consisted of general scientific sessions for three mornings and two afternoons, with 21 presentations by 12 guest speakers. These guest speakers also participated in two round-table luncheon discussions. An additional full-afternoon clinical session at KUMC was devoted to rheumatic heart disease—both medical and surgical aspects. The EENT section ran for two days—morning and afternoon, with seven presentations by two guest speakers and one member. There were numerous specialty meetings in addition. The session lasted from Monday morning through Thursday afternoon.

What has happened during my 18 years as editor? Financially, we have gone through the full cycle—starting with our financial struggles, then reaching the peak of advertising income in 1959, after which it has again been dropping off so that we again operate at a deficit. We have tried, and I hope with some success, to make the JOURNAL as attractive as possible, both its cover (which was a new design in 1955, again prepared for us by Bradbury Thompson, who was at that time the art editor of *Mademoiselle* magazine), the type, the format of the published articles, and the arrangement. We have attempted to make it as readable as possible, with articles arranged so that it was not necessary to jump too many pages to follow through to the end. I hope that it has met with some degree of success.

I believe that probably the most satisfying accomplishment during this time was the production of the Centennial Issue, during 1959. This was a major effort of all the members of the Board and Pauline Farrell, with the help of Oliver Ebel, and the art work of Perce Harvey. We were quite proud of it, and it won for the JOURNAL a special award from one of the consultant-speakers at the next Bureau meeting.

As I have each year in the past, I wish again to thank all those whose work has made possible the publication of the JOURNAL—during the past year, and during the past 18 years. I reiterate, that the Board and Mary Rogers (and before her, Pauline Farrell and Betty Marsh) and Oliver Ebel “do” the JOURNAL, with my role being less important. Perhaps the most useful thing which I have done by being editor so long, was to save the Council the trouble of finding someone else who would be it!

For the future, I would hope that the JOURNAL could receive from many of you, more of the short papers which can be so interesting. I would hope that there can be more “special issues,” particularly those related to a locality. We have had 24 annual issues from KUMC; at least one each from Emporia, Wichita, and Halstead, and I would hope that other localities could be persuaded to produce their own special issues—Topeka, Winfield, Hays, Salina, Kansas City, Newton, and others, in addition to repeats by those which have done it before. I would hope that the JOURNAL could have available more of the activities of the Society’s committees, commissions, and Council, and appropriately prepared papers from some of the committees, such as the Cancer and Maternal Welfare pages which have been published at times in the past.

I would hope that it could become self-supporting again, but regardless of whether it does or not, I hope that it will strive toward quality of contents and quality of appearance, even though it might re-

quire some additional subsidy by the Society.

As I look back, I have enjoyed these years, and I am deeply appreciative of all the loyalty and help that has been given to me, and I wish for my successor the same enjoyment, and the same support.

ORVILLE R. CLARK, M.D., *Editor*

Title XIX (Medicaid)

Again this year, I welcome the opportunity to report to you on the current status of the Medicaid program in Kansas.

As you know, the State Board of Social Welfare prorated the payments to providers of medical services to 75 per cent of the usual and customary fees. This was necessitated by the fact that appropriated funds appeared to be inadequate to pay usual and customary fees for the last six months of fiscal year 1970. The effect of proration to date has resulted in a savings of about \$440,000 and if provider costs continue on the average monthly costs for May and June, the savings will be about \$860,000. Even with proration it is projected that there will be a deficit of \$547,163 in the funds budgeted for provider services.

On April 20, 1970, providers of services in Johnson, Sedgwick and Wyandotte counties were authorized to send their claims directly to Blue Cross-Blue Shield instead of to the respective county welfare departments. As rapidly as Blue Cross and Blue Shield can establish the necessary routines, other counties will be added to the end that all claims will be sent directly to Blue Cross-Blue Shield. Determination of eligibility will be made at the state level. However, if you as individuals have any reason to question eligibility, you should call the local welfare department for confirmation.

The State Department of Social Welfare and Blue Cross-Blue Shield are in the process of negotiating a new contract for the coming year. In the light of three years’ experience and careful cost accounting, Blue Cross-Blue Shield should be able to project the costs of administering the program without jeopardizing the reserves of the Blue Cross-Blue Shield subscribers.

In the contract bid there are some additional alternatives. One of these is a plan for definite computer screening and analysis, similar to the program that they are developing for Medicare. If this alternative is accepted by the State Board of Social Welfare, accurate data can be developed on utilization as concerns both the provider of services and the recipient. Areas of over-utilization can be pinpointed and referred to the proper committees or county welfare departments for action. Up to the present time, the ferreting out of over-utilization,

be it by provider or by recipient, has been on a haphazard basis.

I am sure that you are all interested in the Medicaid program for next year. The analysis of numbers of persons served and usage over the past two years may be of value. For comparable months, there has been a decrease in the number of patients receiving services under the medical only program. However, there has been some increase in the number of persons receiving services under the public assistance program. Of the total number of persons receiving medical services, there has been an increase in two months and a decrease in six months of the eight months which were compared. If one were to attempt to draw conclusions from these comparisons, it would appear that there is some leveling off of the total number of persons receiving medical services. Whether this trend will continue is certainly problematical. Epidemic illness, increased unemployment, or other social and economic conditions could produce a marked increase in demand for services.

From a fiscal standpoint, the Legislature appropriated \$34,597,603 for medical services in fiscal 1971. This is an increase of 8.5 per cent over the budgeted allowance for fiscal 1970. However, the costs for 1970, even with prorations may be greater than the appropriation. These figures are exclusive of nursing homes.

The State Department of Social Welfare is pleased with the profession's increasing interest in utilization review. The fiscal position is being constantly reviewed. Proration will be continued only when fiscally necessary. The State Board of Social Welfare, after due consideration, will probably make an announcement of their decision on proration following their May board meeting.

The Medicaid program is based upon the goals of good medical care to those who cannot afford to pay for it themselves. Good medical care is based upon the concept of medical necessity. The luxuries of medical care over and above medical necessity is not an obligation of the Medicaid program.

In closing, may I urge your continued efforts in utilization and utilization review. May I urge you to evaluate the medical needs of your patients and use restraint in administering injections, prescribing drugs, and ordering noncontributory x-ray and laboratory examinations. Since you, as physicians, have primary control over utilization of services, the success or failure of the Medicaid program in Kansas is dependent upon your cooperation and conscientious efforts to comply with the goals of the program.

LUCIEN R. PYLE, M.D.
Coordinator of Medical Services
State Board of Social Welfare

Blue Shield

This is my last report to the House of Delegates as President of Blue Shield. Earlier today, a new President, Dr. Carl Gunter, Quinter, was elected by the Board. He deserves your confidence and support.

I would like to depart from the usual recitation of facts and figures, membership growth, financial status, etc. I will summarize all of that in a sentence: Blue Shield is in excellent condition.

I would also like to comment briefly on Title XIX. We are willing to enter into a new contract with the State Department of Social Welfare for a one-year period at an adequate reimbursement rate. Even though the Kansas Medical Society Executive Committee voted in the January 18 meeting encouraging Blue Cross-Blue Shield to continue as Fiscal Agent, we will ask the Executive Committee to give us their opinion as to whether or not the Kansas Medical Society supports our signing the new contract when it is completed. I can assure you that we have no intention of signing the contract without your support.

What I really want to do today is to ask you to explore with me some of the positive things I feel we can do to make Blue Shield's services and their relationship to the private practice of Medicine more effective. As physicians we have never been quite willing to face the fact that we have in Blue Shield an instrument which could be used for great benefit to the public and the physicians in Kansas.

Blue Shield could be such an instrument if we could agree among ourselves to trust it, to plan with it, and to support it. The Kansas Medical Society, working with Blue Shield, could create important new programs to help solve some of our medical care problems.

Let me first describe some of the strengths I feel we already have in the relationship between Blue Shield and the Kansas Medical Society. Here are some of the major considerations:

- The degree of cooperation between Blue Shield and individual physicians is generally good. Over 90 per cent of the members of the Kansas Medical Society in active practice are participating physicians. These participating physicians cooperate with Blue Shield by accepting the policies of the Prevailing Charge Plan as approved by the 1968 House of Delegates; by using Blue Shield methods of reporting services, and in abiding by decisions of review committees on unusual cases. In other words in our day to day operations we have essentially a viable program of prepaid medical service—that is, at least for most of our services.

- Next, the Kansas Medical Society has given Blue Shield clear channels of communications through the Blue Shield Relations Committee, now chaired by

Dr. Jim Fisher, and the Commission for Socio-Economic Study, now chaired by Dr. Ed Ryan. These channels enable us to hold discussions with physicians across the State before important policies are implemented.

Furthermore, under the Utilization Study Committee, headed by Dr. Francis Collins, the Kansas Medical Society has been working diligently for a better system of utilization review which is supportable and effective. The work of this committee is leading to a general acceptance of utilization review as a condition of life.

- Your President, Dr. Leland Speer has also been most cooperative during the past year. Dr. Speer worked with us in setting up a special meeting last August for an all-day exchange of ideas between the Kansas Medical Society Executive Committee and the Blue Shield Executive Committee. This exchange of information was helpful in creating a better understanding between the two organizations.

- In addition, the working staffs of both organizations have been coordinating various communications programs, including recent district relations committee meetings. Of course, we have always had fine cooperation from Oliver Ebel and Swede Swenson.

- A final point is that all major policy questions are brought to this House for action prior to implementation.

In general, I would summarize that we have in being now a communications system which should reassure every doctor that the proper interests of Medicine are adequately protected. Please keep in mind that you, yourselves, in your own council districts, elect the doctors to the Blue Shield Board and that they are a substantial majority of the board members.

I submit that the above conditions of the relationship between Blue Shield and the Kansas Medical Society suggest that positive programs of cooperation can be developed and implemented if we have the will to do it.

Let's go into some of the negative aspects which have to some extent been responsible for the fact that the medical profession has not made full use of Blue Shield as a potential instrument of service to itself and the people of Kansas.

A man from Mars might well ask: "With all that you have going for you, why hasn't Medicine done more with Blue Shield?" But our man from Mars would not have been aware of the several underlying impediments which have prevented all of us from achieving more perfect results. Review with me if you will a few highlights of recent history which may help us understand how these impediments have in-

terfered with our progress. If you will look back over the past 25 years, I believe you will agree that prepayment of medical services and/or medical insurance grew up in our midst something like Topsy. The medical profession, itself, as the saying goes, was more or less dragged kicking and screaming into the third party era. We physicians simply did not like the idea—and probably still don't—of a third party coming between us and our patients. All at once, it seemed, in the fifties and early sixties, we awoke to the fact that the vast majority of our patients had some form of insurance coverage—Blue Shield or commercial insurance. Even though our own Kansas Medical Society created Blue Shield through an original capital loan, and even though Blue Shield policies have been under the control of the physicians you elected to the Board, there are some basic resentments to Blue Shield itself in each medical heart.

What is it that we resent?

- We resent the paper work which increases our cost of operation.

- We resent having to explain what we did to some group called a review committee, even though they are our colleagues.

- We resent the implications that our fees are out of line when Blue Shield pays less than we charge.

- We resent under the Prevailing Charge Plan, the fact that another physician—"no better than I"—may be receiving more for a given service than we charge.

While there are elements in the commercial insurance programs which have similar causes for resentment, such as completely inadequate payments for certain services, it is probably true that physicians do not get as emotional about commercial insurance as they occasionally do about Blue Shield. This is perhaps due to the fact that we have no contractual obligation to the policyholder of commercial insurance who comes in with some indemnity contract.

For example, say that my fee is \$200 for a given service. The commercial contract pays \$100 for the service. The patient pays the difference. In more recent times, however, it should be noted that the commercial insurance industry is beginning to bear down quite a bit harder in an effort to make physicians accept their payment as full payment. Many of you may have already received letters from Travelers, John Hancock, Aetna, *et al.*, implying that their particular payment was quite adequate and that you are expected to accept it. In fact, there is a trend for these companies to guarantee to the policyholder of large groups that they will even go to court to prevent you from collecting any difference from the

policyholder. In addition, the commercial insurance industry has asked medical societies to adjudicate problem claims. The reason I bring this matter to your attention is simply to make the point that in the long run, all forms of prepayment will eventually require physician commitment. The important question for the future may well be: What voice will the medical profession have in defining this commitment?

But back to the sense of commitment that we have toward Blue Shield. Perhaps the ultimate in financing physicians' services has been achieved through the development of the Prevailing Charge Program—that is, the Plan that pays the vast majority of doctors their own actual fees as they themselves have established them. Blue Shield funds derive from one source, payments made by subscribers. Physicians' commitment to subscribers calls for a sense of reasonableness in fees that subscribers, as a body, will understand. Toward this end, the Blue Shield Board has requested the Kansas Medical Society to develop criteria for review of re-registrations which reflect substantial increases. This is not to say that the Blue Shield Board considers current fees unreasonable. However, the Board feels that inflationary pressures on fees require some degree of peer review in order to provide a concrete demonstration of the medical profession's sense of commitment to the subscribing public.

I submit that it is this sense of commitment that we have had toward Blue Shield since the beginning that makes us like Blue Shield only some of the time. We tend to dislike Blue Shield whenever we are asked to accept a writeoff of some portion of our charges, which may happen to be above the state range.

The trouble is that Blue Shield has something to do with our consciences. I know, for example, that it helps me satisfy my conscience when I realize that I am making a contribution to a program which is helping over 700,000 self-supporting Kansans meet a large part of their medical expense on a voluntary basis. I also know that my support of Blue Shield cautions me to curb certain charging practices I may desire to follow.

My point is that our ambivalence toward third party payments has tended to prevent us from adopting a positive program to make the system work better. In this context, I am thinking of the entire third party system, not just Blue Shield. So we let the system of third party payments grow something like Topsy until finally the government came in with Medicare and Medicaid.

As we come now to consider the interface between government programs and physicians, we re-

ally begin to get into an abrasive area. "Interface"—That's a word one hears in these days of computer programming. It's a good concept. When the interfaces come together smoothly, everything works better.

But interfaces have to be thought out carefully and we might as well be candid among ourselves and say that we were not really ready to do utilization review of both institutional and professional services, nor had we fully accepted the implications of the concept of usual, customary and reasonable charges which involves an entirely new approach in the payment of medical services—I might add, a far more rigorous approach requiring careful definitions of services, accuracy in reporting, and above all, trained and accurate personnel in the Blue Shield office.

All at once, a third party, that is, the government, acting through the intermediary, began to ask certain questions. For example:

Why did you keep this senile man who needed only some assistance in daily living in a \$60 per day hospital bed, or

Why did you give some of your patients cortisone injections whether medically indicated or not, or

Why have your charges to Medicare patients been higher than your charges to other patients?

I submit that we were not ready for these things because of our more or less negative attitude toward all third partyism and we had therefore not developed the experience to handle the rigorous demands of the new system. The interface was causing abrasion, not cooperation.

Now, in addition to having to cope with the resentment of physicians which has developed within its own system, Blue Shield has picked up the whole network of resentments which the word, quote, government, unquote, conjures up in the mind of the average physician.

Ambivalence, lack of consensus, and some resentment; these have crept into our dealing with the working relationship between medicine and the third party system. These have prevented to some extent the vigorous planning and communications necessary to make the system more compatible with our services and the way we want to deliver them.

In spite of these problems which are now more clearly understood, and thus more easily solved, I believe most of us in the Kansas Medical Society want to work for a more effective system. I have mentioned some of these negative aspects because I hoped to throw some light, if possible, on some of the obstacles which may have prevented us from doing more to preserve the voluntary system of medical care.

There is much talk today in the field of business about the concept of management by objectives. The central theme of this concept is that organizations can come closer to doing what they want to do if their planning is oriented toward solutions (objectives) rather than problems. It is my feeling that this concept could well be adopted by the Kansas Medical Society, and particularly in connection with its relationship to prepayment—or third partyism if you will.

I suggest that the Kansas Medical Society ask itself: What do we want prepayment to accomplish for us and for the public? Then you ask what do we have to do to make that objective a reality. As you analyze the steps you come to the problems and you ask yourself, how can the problems be eliminated or solved so that we can achieve our objective? This is positive planning. I think we need some of it now. Kansas medicine and the Kansas health care community need to take the initiative to maintain public confidence and to develop programs that will provide people the health care they are going to need in the seventies and eighties.

I want to close now with an official statement from Blue Shield. This statement has been cleared with the Blue Shield Board and it should be viewed as a direct commitment by Blue Shield, if the Kansas Medical Society wishes to follow through on these suggestions.

Blue Shield suggests that the Kansas Medical Society request its Commission for Socio-Economic Study to begin discussions with Blue Shield and with others in the health field to develop objectives and programs in the following areas:

(1) Improved working methods between prepayment and/or insurance organizations and providers of service.

Such methods might involve universal reporting systems, new coding and nomenclature, simplification of contracts, reduction in paperwork and more rapid claim processing and payment.

(2) Design experimental programs involving significant changes in the health care delivery system which might be tried on a pilot basis, in cooperation with local medical societies looking toward more effective and economical use of scarce medical personnel and a reduction in cost to the consumer.

(3) In concert with planning agencies and other interested parties in the health field, develop recommendations for the construction of new facilities and/or creation of new service agencies to provide levels of care below the acute general hospital or extended care facility level, in order that patients may have access to and prepayment for the most economical level of care deemed to be needed by the attending physician.

(4) Develop plans and methods to increase medical and other health care to Kansas, and to make more efficient use of the personnel we have.

(5) Develop our own position regarding national health insurance. In this connection, we suggest that the Kansas Medical Society carefully study our own AMA proposals. While I am not thoroughly familiar with the so-called tax credit idea, I believe it offers a very attractive alternative to the massive government plans one hears about relative to national health insurance. I believe that we can add to the AMA concept and that it would be helpful for the Kansas Medical Society to put in the hands of our own congressional representatives suggestions for a national health program. The main value I see in the tax credit idea is that it will keep huge sums of money away from Washington and funnel this money into the hands of private competitive insurance organizations.

In connection with the development of these programs, Blue Shield offers Kansas Medical Society its resources in manpower and financing. Such financing, for example, could encompass expenditure for hiring health care planning consultants, expenses of communications and meetings, and experimental programs that may be involved. Let me summarize what I have said in a single sentence:

The medical profession can profoundly influence the way medicine is practiced and paid for in the seventies, but to do this we must take the initiative through positive planning for our desired objectives.

JAMES L. MCGOVERN, M.D., *President*

The President

The President, Dr. Leland Speer, gave an oral report to the House of Delegates, thanking the committees and all people who helped to carry the Society forward during this year. He spoke briefly about some of the resolutions introduced today in which he had particular interest. He spoke of the need for increased political action: letters to the legislators are not enough, the candidate must be supported through contributions and in giving time. He hoped KaMPAC could raise enough money to become interested in candidates to the state legislature.

Dr. Speer said he was proud of the state of Kansas. He spoke of his travels over the state during the past year. He also discovered that the Kansas Medical Society is well thought of nationally. He again expressed his pride in the doctors of Kansas and in the Kansas Medical Society.

The President-Elect

Medicine is at the cross-roads! Either we lead—or we follow!

Because of this and the importance of some of the resolutions coming before this body, I want you to know some of my thinking and plans for the coming year. I have taken this opportunity to exercise my option to make a brief statement to this House of Delegates.

My goal will be taken from our constitution—Article II, “to unite the medical profession of the State of Kansas in promoting the science and art of medicine and protecting the health of the citizens of this State.”

To meet the current challenges to medicine, as I see them, I propose the following course of action:

Course I: That the Kansas Medical Society take a positive, unemotional stand in all matters:

First—by exerting leadership in a problem-oriented as opposed to a crisis-oriented manner. We need to define the problem and act, not wait until a crisis appears, then decide.

Second—by taking a positive stand in response to the current problem areas such as Drugs, Environment, Delivery of Health Services, Education, Welfare, Utilization, Peer Review, RMP and Community Health Planning and Future Patient Care methods.

The need to avoid “tunnel vision” in our leadership is imperative. We need to observe all phases of the various problems and not be bound into a corner by getting so completely involved in a single phase that we can’t see the other areas that need help.

Third—the basis for the policy stand we take will be founded on our Constitution and By-Laws and prescribed activities of our organization by way of—

1. The activity of our Commissions.
2. The abundance of committee function that is necessary to get factual information to be able to make recommendations.
3. The more effective use of Councilor liaison both with the members of the districts and with the State Society.
4. Action-oriented involvement of *all* physicians of the state. This is your Society and we need your help in determining the policy decisions so they can be more effectively carried out by your elected officers.

Course II: That the Kansas Medical Society make its stand known:

1. To each physician in Kansas.
2. To all the citizens of Kansas.
3. To other areas of organized medicine, particularly the AMA.

4. To the politicians because they are in a different category due to the peculiar position they occupy in writing the laws under which we must operate.

Course III: That the Kansas Medical Society use forceful, action-oriented communication.

To implement this third point, I propose:

1. To put the leadership of the health care where it belongs—namely, the Kansas Medical Society—not the federal government, not the state legislative areas, not the Welfare Department, not any third party carriers, not any hospital organization or any other recipient groups.

2. To send a monthly “President’s Letter” to each physician in Kansas (more frequently if necessary depending on activities during this coming year) so all of you will be aware of problems and activities as they arise and will know what action has been taken by your elected officers. This needs two way action if it is to be effective. We at the state office want to know of the activities in your districts so we can send this information throughout the state. There will soon be a transcribing device attached to the telephone at the state executive office so you can call any time, day or night or on weekends, and leave your message. It will be taken off at the beginning of the next working day and you will be given an answer as soon as possible.

3. To develop a program for “Information and Education.” As a result of the recent increase in our dues, we now have the funds to employ a professional public relations firm. I don’t like the term, “public relations” because of the vagueness and misunderstanding about the purpose of the term. Therefore, I propose to use the term, “Information and Education.” This will enable us to use professional help in editing information and contacting the news media to adequately communicate the policy decisions of the Kansas Medical Society as determined by this House of Delegates.

4. To give additional duties and opportunities to our councilors which will enable them to more adequately represent their constituent members as well as establish a more direct two-way liaison between the districts and the state office.

5. To form a legislative committee in each councilor district. Laws are passed in Topeka, but the groundwork and the opinions are determined at the grass roots level. We have an effective lobbyist, but we expect him to do all the work. He is excellent in his position, but we need to help him. When we are discussing principles related to health care, legislators are more likely to listen to a physician from their district rather than a lobbyist.

6. To meet the ever-increasing challenges to or-

ganized medicine by broadening the committee responsibilities as needed. In this way we can guide the course of health care and delivery of health services.

7. To lead the Kansas Medical Society in demonstrating our willingness to lead the changes where needed and to do our best to modify and guide the changes which are forced upon us by legislation, to enable us to provide the best health care for the citizens of Kansas.

This is my plan for action during the coming year as I have tried to evaluate the demands upon the medical profession in areas other than professional ability. We must maintain our standards of professional excellence by postgraduate courses and other methods which are available. With your help and cooperation we can make the coming year another milestone along the road of progressive leadership by the Kansas Medical Society for the benefit of the people of Kansas.

FRANCIS T. COLLINS, M.D., *President-Elect*

The Executive Director

I am again privileged to express the gratitude of your staff for your interest in the Society and for your help. As you all know, this has been an exceptional year in many respects. We have been busy. Swede has done a tremendous job not only in behalf of KaMPAC and in setting up this meeting but working with many committees. He is now performing a great service to your Society. He is resourceful, imaginative, hard working. I am very glad he is with us.

I have said it before, but I mean it again this year. We have the absolutely most loyal group of girls that ever worked for any association. Anything that will help your Society they are willing to do any time.

I need not tell you how remarkably Dr. Speer served you as president. When you consider the hours alone, Dr. Speer has given hundreds in your behalf. I do not recall when a president ever suffered a more difficult year with pressures from Washington, from Chicago, from Topeka, brought to bear constantly. His contacts with our U. S. Senators has helped your Society in a number of ways. Through long conferences, he gained for you a closer liaison with the medical school than before. His appearance before legislative committees almost certainly prevent chiropractors from being paid Blue Shield benefits. His personal acquaintance with acknowledged leaders in the House and Senate influenced many items of legislation along lines you wanted.

Dr. Speer expanded committee activity into areas of service we had not previously explored. He ad-

vised us almost daily and regularly contacted committee chairmen as he saw the need for their effort. It was Dr. Speer who started communications with the Welfare Department which had been completely off for four months after the new director took office.

We are today meeting with more allied professional groups than we ever have before, and we are progressing toward better understanding with several. The Kansas Hospital Association revised its Planning-Coupled-With-Payment idea according to suggestions made by the Committee on Hospitals and Comprehensive Health Planning. Optometrists are seriously considering the abolishment of their licensing board to come under the Board of Healing Arts. We actively participate in the Kansas Health Insurance Council.

There are many positive, progressive achievements for which Dr. Speer was directly responsible, and yet, again and again his year was interrupted with crises. No one could have concerned himself more than did Dr. Speer. No one was ever more genuinely acting in behalf of the Society. I know you are aware of this, but we all are much in his debt.

Dr. Collins assumes his responsibility with some advantage. It is true, many and most of our big problems are still with us. Dr. Speer had to face each crisis as it struck—Dr. Collins has been given time to consider them. You have heard some of the innovations he will place into effect. We are excited over the prospect of resolving difficulties through action and we know because we visit with Dr. Collins often, that action will be the key word of his administration.

In addition to those about which he spoke here are just a few more that need study and decisions.

Chiropractic—the time has come to evaluate this subject. Several resolutions will be introduced to strengthen regulations over the use of x-rays. This is excellent. It is something the legislators can understand. I hope action in this area will be approved.

But, the problem is larger. By placing them under the Healing Arts Act we have made them respectable in the eyes of the state, but we have reduced their number from some 3,000 licensed, although not all were in practice, to 600 today. This law has allowed about ten each year to enter the state. Before it was more than 300 annually. The question you must one day consider is whether the gain was worth the price you paid for it—and what modifications, such as x-ray regulation, can improve the quality of care in this state.

Another problem is the need for greater involvement in legislation. I sense a mood among legislators that they want available to the people of Kansas

more medical care; first, more physicians, then more paramedical persons. The use of paramedical people will free you from time spent in less technical procedures, but adds to your liability unless they have their own license to practice. This opens the door for establishing additional problems as they seek to expand their privileges—but this too is a question that needs to be resolved and your position must be explained to the legislature well in advance of the next session.

OLIVER E. EBEL, *Executive Director*

SECOND SESSION

The second session of the House of Delegates convened at the Broadview Hotel, Wichita, on Wednesday, May 6, 1970, at 9:00 a.m.

The Speaker called the session to order and ballots were distributed for the election of officers, speaker and vice speaker and nominating committee.

The tellers reported the results of the election as follows:

PRESIDENT-ELECT: William J. Reals, Wichita

FIRST VICE PRESIDENT: Kenneth L. Graham, Leavenworth

SECOND VICE PRESIDENT: Thomas F. Taylor, Salina

CONSTITUTIONAL SECRETARY: Emerson D. Yoder, Denton

TREASURER: Chester M. Lessenden, Jr., Topeka

AMA DELEGATE: Lucien R. Pyle, Topeka

AMA ALTERNATE DELEGATE: George E. Burket, Jr., Kingman

SPEAKER: Clair C. Conard, Dodge City

VICE SPEAKER: William R. Roy, Topeka

NOMINATING COMMITTEE: George E. Burket, Jr., Kingman, Chairman; Norton L. Francis, Wichita; George F. Gsell, Wichita; John L. Morgan, Emporia; H. St. Clair O'Donnell, Ellsworth.

The caucus of the Council Districts announced the selection of the following to serve as councilors and alternates from their respective districts:

DISTRICT 1: Wayne Wallace, Atchison, Councilor; Delbert L. Larson, Hiawatha, Alternate.

DISTRICT 2: John D. Huff, Kansas City, Councilor; Clarence L. Francisco, Kansas City, Alternate.

DISTRICT 4: William G. Rinehart, Pittsburg, Councilor; I. Joseph Waxse, Oswego, Alternate.

DISTRICT 11: M. Robert Knapp, Wichita, Councilor; Warren E. Meyer, Wichita, Alternate.

DISTRICT 13: Eugene T. Siler, Hays, Councilor; Vale Page, Plainville, Alternate.

DISTRICT 14: Marvin O. Steffen, Great Bend, Councilor; Wendale E. McAllaster, Great Bend, Alternate.

DISTRICT 15: Richard H. Hill, Meade, Councilor; Clair C. Conard, Dodge City, Alternate.

RESOLUTION NO. 70-1

Medical Responsibility in Mental Health Centers

WHEREAS, The need exists for guidelines to assist the governing boards in establishing and maintaining medical responsibility for patient care in mental health centers in Kansas; therefore, be it

Resolved, That the Kansas Medical Society recommends the following criteria to assure medical responsibility in all mental health centers in Kansas which offer treatment or psychotherapy for any type of mental or emotional illnesses:

1. That the governing board of each center appoint a medical director, who is a physician licensed under the Healing Arts Act, who will assume medical responsibility for the clinical-treatment services of each center.

2. That the medical director be directly responsible to the governing board of each mental health center.

3. That all other staff members of the center, who perform clinical-treatment services, be directly responsible to the medical director for such functions.

4. That the medical director take final responsibility for decisions regarding diagnosis, prescriptions, assignment and treatment and that such decisions take priority so far as time commitments of staff members are concerned.

5. That, if the local medical director is not a board certified or board eligible psychiatrist, the governing board of the center appoint such a consulting psychiatrist who will consult with the medical director and with his staff to the extent that the medical director deems necessary for him best to meet his responsibilities to the center's patients.

6. That the medical director and/or the consulting psychiatrist attend regular staff meetings at the center, have supervisory conferences with center staff concerning treatment of patients, determine which staff members may or may not participate in clinical-treatment services and in general have direct enough contact with the clinical-treatment services to assure that the patients' medical and emotional needs are adequately met.

RESOLUTION NO. 70-2

Resource Physician Committee

Not adopted.

RESOLUTION NO. 70-3**Continuing Medical Education**

Not adopted.

RESOLUTION NO. 70-4**Policy Communication With Blue Shield**

WHEREAS, Close communication between Blue Shield and the Kansas Medical Society is essential to harmonious relationships and attainment of mutual goals; and

WHEREAS, The presentation of proposals for major policies that are of mutual interest to the medical profession and Blue Shield is the most important element in the process of effective two-way communications; and

WHEREAS, A formal arrangement for presentation and discussion of such major policy proposals would contribute to the assurance of close communication between the Kansas Medical Society and Blue Shield; therefore, be it

Resolved, That the House of Delegates approves the following arrangement as the method by which major policy proposals of common interest to medicine and Blue Shield shall be introduced, considered, and determined in the future:

1. *Source of Policy Proposals:*

(a) Any professional source including individual physicians, committees, commissions, or society and specialty associations.

(b) *From Blue Shield:* The Blue Shield Executive Committee or Board of Directors.

2. *Method of Consideration:*

(a) "First Reading" to the Kansas Medical Society's Committee on Blue Shield Relations for initial clearance for further consideration.

(b) "Second Reading" to Blue Shield district relations committees and/or local medical societies within each Council District.

(c) Consideration of reactions to presentations and/or actions by Blue Shield district relations committees and local medical societies by the Kansas Medical Society's Committee on Blue Shield Relations with development of appropriate resolutions to be recommended to the Commission on Sociology and Economic Study.

(d) The Medical and Surgical Advisory Committee of the Kansas Medical Society served to iron out medical and surgical problems with Blue Shield.

3. *Clearance and Implementation of Policy Proposals:*

(a) Consideration of resolutions and action by

the House of Delegates of the Kansas Medical Society.

(b) Final action by the Blue Shield Board of Directors.

(c) Blue Shield staff implementation concurrent with appropriate communication to individual physicians.

RESOLUTION NO. 70-5**Peer Review**

WHEREAS, The necessity of peer review arrangements has been previously acknowledged as beneficial to the maintenance of the free enterprise system for the practice of medicine; and

WHEREAS, Blue Shield presently fulfills a responsibility as carrier and fiscal administrator for various government programs providing prepaid benefits for medical care; and

WHEREAS, A part of Blue Shield's responsibility under these programs, as well as a part of its responsibility to its own subscribing public, is to develop methods for determining reasonable professional charges, and for assuring medical need for determining reasonable professional charges, and for assuring medical need for payable professional services; and

WHEREAS, Blue Shield has requested the Medical Profession to participate in cooperative review procedures to accomplish these objectives; and

WHEREAS, Cooperative review procedures featuring the availability of local peer committee consideration is the best method of obtaining proper judgments and decisions about cases of unusual charges or professional practices; therefore, be it

Resolved, That the House of Delegates approve a cooperative program between the Kansas Medical Society and Blue Shield through which cases of unusual professional charges and cases of unusual utilization of professional services might be reviewed and determined; and be it further

Resolved, That the procedures for conducting such a cooperative review program be those outlined in the attachment to this resolution which is marked EXHIBIT A.

EXHIBIT A

**Cooperative Review Procedures
Kansas Medicine—Kansas Blue Shield**

Professional Utilization Review

1. Policy Development and Its Clearance
—Kansas Medical Society's Professional Services

Review Committee works with Blue Shield consultants to develop policy guidelines.

—Kansas Medical Society's Professional Services Committee sponsors resolution to House of Delegates.

—Same policy is concurrently acted upon by Blue Cross and Blue Shield boards.

2. Application of Policy

—Blue Shield medical consultants review cases and make determinations according to policy and medical judgment.

—Case is disposed and physician informed accordingly. If denial, doctor is apprised of the procedure for appeal.

3. Appeal and Reconsideration of Determinations

—Doctor communicates to Blue Shield his desire to appeal a decision.

—Blue Shield, working through guidelines established by the Kansas Medical Society and the Professional Services Review Committee, refers appeal to proper local professional peer review committee.

—Local professional peer review committee reviews case according to policy guidelines and medical judgment, makes decision which is accepted as final by both Blue Shield and physician involved.

Review of Unusual Charges

1. Policy Development and Its Clearance

—Basic policy is presently outlined in Resolution No. 55 and subsequent amendments of the 1968 House of Delegates and 1968-1969 series of policy memos published by Blue Shield.

2. Application of Policy

—Blue Shield medical consultants review cases and make determinations according to policy and medical judgment.

—Cases disposed and physician informed accordingly. If denial or reduction, doctor is apprised of right to appeal.

3. Appeal and Reconsideration of Determinations

—Doctor communicates to Blue Shield his desire to appeal a decision.

—Blue Shield, working through guidelines established by the Kansas Medical Society and the Professional Services Review Committee, refers appeal to proper local professional peer review committee.

—Local professional peer review committee reviews case according to policy guidelines and medical judgment, makes decision which is accepted as final by both Blue Shield and physician involved.

RESOLUTION NO. 70-6

Pre-Trial Conference

WHEREAS, The Committee on Pre-Trial Conferences has met several times this year not only as a committee of the Medical Society but also in joint meetings with members of the Kansas Bar Association; therefore be it

Resolved, That the Kansas Medical Society not approve the Pre-Trial Conference concept; and be it further

Resolved, That the committee be directed to study further the concept of arbitration; and be it further

Resolved, That this committee be directed to work with the Legislative Council in its study of malpractice.

RESOLUTION NO. 70-7

Utilization Review for Insurance Carriers

WHEREAS, It seems unfair to give the government programs an advantage we would not extend to private enterprise, which we endorse; therefore be it

Resolved, That the Commission on Sociology and Economics recommend that utilization or peer review at the local level be extended to all insurance carriers by locally designed plans.

RESOLUTION NO. 70-8

Deferred Compensation Plan

WHEREAS, The House of Delegates in 1969 adopted Resolution No. 32 referring to Deferred Compensation Plan to be set up for the members of the Kansas Medical Society; and

WHEREAS, The said Deferred Compensation Plan has come to no fruition; therefore be it

Resolved, That the House of Delegates withdraw its approval of the Deferred Compensation Plan as presented at the May 1969, meeting.

RESOLUTION NO. 70-9

Representatives on the Welfare Board

Not adopted.

RESOLUTION NO. 70-10

Legislative Testimony

Not adopted.

RESOLUTION NO. 70-11**Health and Welfare Boards**

Not adopted.

RESOLUTION NO. 70-12**Task Forces**

Not adopted.

RESOLUTION NO. 70-13**Representation on Board of Health**

Not adopted.

RESOLUTION NO. 70-14**Kansas Coordinating Council for Health Planning**

Although this resolution was not adopted, the following portion was accepted for information:

Hospital Payment Coupled With Planning

The Committee on Comprehensive Health Planning and the Committee on Hospitals have met on four separate occasions with the Kansas Hospital Association to discuss ways in which effective hospital planning can be enforced. These committees succeeded in modifying early hospital proposals.

Enfranchisement of hospitals has already been accomplished in some states. The threat of federal control is increasing. For that reason and because it appears to be in the best public interest, the Kansas Hospital Association recommends Kansas Hospitals submit to controls before these are politically required. The following plan has been accepted.

A hospital intending to improve facilities or equipment in any amount exceeding \$250,000 or three (3) per cent of its operating budget, whichever is less, must obtain prior approval of its plan by the area comprehensive health planning council or accept a minimum of five (5) per cent reduction in Blue Cross payments. The Hospital Association will recommend that future changes in the law include Title XVIII and Title XIX payments in this coupling process.

An appeal mechanism is provided which will consist of one representative selected from each officially recognized area health planning council except for the region involved. The decision of this appeal body is final and its finding, after hearings, is binding upon Blue Cross.

RESOLUTION NO. 70-15**Position and Purpose of Comprehensive Health Planning**

WHEREAS, Comprehensive health planning involves all phases of health care and ultimately will affect the manner in which physicians' services are delivered; therefore be it

Resolved, That the Kansas Medical Society recommend to the Kansas Coordinating Council for Health Planning the following statement of position and purpose:

1. That planning be locally initiated and that residents in the area participate in the definition and in the solution of local problems.

2. That physicians representing their local medical society actively participate in the work of area planning councils.

3. That regions be locally developed according to the judgment of residents living within the area.

4. That the local medical society encourage persons with the highest degree of professional and technical competence in their respective fields to actively participate in area comprehensive health planning councils.

5. That encouragement be given on the local, the area, and the state level for continued discussion with allied professional groups.

RESOLUTION NO. 70-16**RMP and Comprehensive Health Planning**

WHEREAS, Programs sponsored by comprehensive health planning and by regional medical planning are often similar and sometimes overlapping; and

WHEREAS, It appears that the Congress will sometime in the future create a single organization combining these two; and

WHEREAS, This Society now has a separate committee working with each of these planning organizations; and

WHEREAS, This also results in some overlapping effort; therefore be it

Resolved, That the Society shall have one committee to serve as advisors to both comprehensive health planning and to regional medical program.

RESOLUTION NO. 70-17**Physician Shortage**

WHEREAS, Kansas loses more medical graduates to other states than it gains by immigration; and

WHEREAS, Kansas has a deficit of physicians compared with the nation as a whole; and

WHEREAS, There are areas of Kansas in which there is a marked shortage in physicians and other health services as compared with other regions of the state; and

WHEREAS, Socio-economic factors are said to be related to the shortages; and

WHEREAS, The methods and modes of medical education may be factors in introducing students of medicine to the opportunities in Kansas and preparing them for practice in Kansas; and

WHEREAS, The Kansas Medical Society should assume leadership in solving problems in health services, education and medical socio-economics rather than permit such leadership to fall to other agencies by chance or to government with the resultant loss of leadership by organized medicine; and

WHEREAS, Licensure problems arbitrarily prevent some medical graduates from coming to Kansas; therefore be it

Resolved, That the Kansas Medical Society constitute an *ad hoc* group to study the causes of the named problems in depth and propose remedies; and be it further

Resolved, That this study group be composed of representatives of the Commission on Socio-Economics, Commission on Health Services, and Commission on Education; and be it further

Resolved, That this study group work closely with consultants from the State Department of Health, the University of Kansas School of Medicine, and such other institutions and organizations as can offer substantial information and assistance.

RESOLUTION NO. 70-18

The KUMC Package Plan

WHEREAS, The Dean and the Provost of the University of Kansas School of Medicine presented the package plan for the future development of the medical center; therefore be it

Resolved, That the six points of the plan be approved by the Kansas Medical Society as follows:

1. The basic budget must be increased. When outside resources diminish, the State must find a way to make up this difference.

2. It is recommended that together or separately departments of community medicine and family practice training shall be established.

3. The curriculum will be revised to offer a medical degree in three (3) years of eleven (11) months each to those students who wish to take the accelerated course. This will at some point in the future provide two graduating classes in one year.

4. The State will be asked to support existing and new intern and resident programs in Kansas providing competitive salaries that will serve to keep physicians in this State.

5. Future expansion requires planning, and money will be requested for consideration of expanded clinic and hospital facilities. If the hospital could be modernized and additional basic science facilities constructed, the school could be expanded from its present 125 students per class to 170 students per class at reasonable cost.

6. Increase the effectiveness of the preceptor program by utilizing physicians and health delivery systems in larger Kansas cities.

RESOLUTION NO. 70-19

Public Information Program

WHEREAS, The Kansas Medical Society needs to have a specific program for the improvement of relations; and

WHEREAS, The Committee on Relations with the News Media has researched this matter; and

WHEREAS, The committee is proposing that the presentation by Parkinson's and Associates does in fact propose a specific program with all facets of the news media; therefore be it

Resolved, That the House of Delegates authorize a sub-committee consist of the President, President-Elect, First Vice President, chairman of the KaMPAC board, and the Executive Director to take action on press releases and any information prepared by Mr. Hank Parkinson regarding the Kansas Medical Society's public relations program; and be it further

Resolved, That the House of Delegates authorize the Council of the Kansas Medical Society to approve the expenditure of funds necessary to implement the program as outlined by Parkinson and Associates.

RESOLUTION NO. 70-20

Athletic Physical Examination

WHEREAS, The Kansas Medical Society desires to maintain the highest degree of health in all children and youth in Kansas, including participants in school athletic programs; and

WHEREAS, Participation in school athletics may present an extraordinary health hazard to school children who have physical defects or chronic diseases; and

WHEREAS, Such defects and diseases can be best detected and evaluated by a physician at the time of

a complete physical examination in his office; and

WHEREAS, The frequency of such examinations should be such that such defects and diseases would be detected before the student participates in athletics; and

WHEREAS, The availability of physicians presents a practical limit to the frequency of such examinations and dates when they can be performed; therefore be it

Resolved, That

1. The Kansas Medical Society recommend to the Kansas School Health Advisory Council and the Kansas State High School Activities Association the following regarding participation in school athletics:

(a) A complete physical examination is necessary prior to participation in all school athletic programs.

(b) Such examination should be conducted individually by a physician in his office or under similar circumstances.

(c) The date of such examination should be proximal enough to the date of participation in athletics so that assurance can be given to the participant and the school that no unusual risk is involved.

(d) An interval of no more than twelve (12) months is necessary to provide that assurance.

(e) A certificate from the physician to the school should convey the following:

(1) The date that the most recent physical examination was performed.

(2) A statement that the student is able to participate in school athletics.

(3) Any defects which would contraindicate complete participation.

(4) Modifications which should be made in his athletic program in accordance with (3) above.

(5) The revision of the present form to cover (1) through (4) of (e).

RESOLUTION NO. 70-21

Physical Examinations

WHEREAS, Inquiries have been submitted to the Commission for Society Organization regarding the responsibility of Kansas Medical Society members performing physical examinations for groups of young people participating in activities such as the YMCA's Little League baseball and football program and the Boy Scouts of America camping trips, etc.; and

WHEREAS, A uniform response to such requests by members of the Kansas Medical Society is deemed desirable; therefore be it

Resolved, That the physicians' ethical obligation in connection with any such physical examinations is to insure that they be performed in full accordance with accepted medical standards, preferably in the physician's office; and be it further

Resolved, That financial remuneration, if any, for the above stated physical examinations is a matter to be determined by discussion between the physician and the parents.

RESOLUTION NO. 70-22

By-Laws

Resolved, That the Kansas Medical Society amend its Constitution and By-Laws under section 11.21 by adding a comma after the last word "county" and following that by adding these words: "with the exception of medical student societies," so that the section will read: "*each county be included among the component societies in this state, but only one (1) component society may be chartered in a county, with the exception of medical student societies.*"

RESOLUTION NO. 70-23

By-Laws

WHEREAS, The Kansas Medical Society has in its By-Laws a membership category for interns and residents, but in order to be counted as active members, they must have the full privilege of voting and holding office; therefore be it

Resolved, That the Kansas Medical Society amend its Constitution and By-Laws and make a new section 1.6125 to read: "*interns and residents engaged in full-time training be given full privileges of membership including the right to vote and hold office and be assessed annual dues of one dollar (\$1.00),*" and delete section 1.621.

RESOLUTION NO. 70-24

Student Component Society Membership

WHEREAS, It is the intent of the Commission for Society Organization that a separate component society may be chartered consisting of students regularly enrolled in a fully accredited school of medicine operating in Kansas; and

WHEREAS, The Commission intends the Medical Student Society to have representation in the House of Delegates in the same proportion as other chartered single county societies; and

WHEREAS, The Commission intends that member-

ship in such society shall be attained as is membership in any other component society, except the Kansas Medical Society will assess no dues to such members and except that their membership shall terminate upon their graduation; there be it

Resolved, That Section 11.41 be amended by adding at the close, "*also eligible for membership shall be students attending accredited medical schools in Kansas through the chartered Student Medical Society*"; and be it further

Resolved, That the By-Laws be amended by adding a new section 1.6126, that members of the Student Medical Society shall be assessed no dues and those desiring to receive the JOURNAL may do so upon payment of one-half the subscription price; and be it further

Resolved, That Section 1.633 be deleted.

RESOLUTION NO. 70-25

Osteopathic Membership

WHEREAS, The AMA at its House of Delegates meeting in December 1968 recommended that its component state and county medical societies amend their By-Laws to admit qualified Doctors of Osteopathy as members; and

WHEREAS, The Healing Arts Act of the state of Kansas, which provides for a joint board of examiners, allows Doctors of Osteopathy the right to take an examination to practice medicine and surgery and upon satisfactory completion of this examination they receive all the rights and privileges of the Doctor of Medicine; therefore be it

Resolved, That the Kansas Medical Society amend its By-Laws to allow the admission of qualified osteopaths according to the following changes:

Section 1.0—MEMBERSHIP

1.611 Members who pay full dues. Members of a component society who hold a degree of Doctor of Medicine, Doctor of Osteopathy, or their equivalent, and are fully licensed to practice medicine and surgery by the Kansas State Board of Healing Arts.

Section 4.0—GENERAL MEETINGS AND SECTIONS

4.43 Residents and interns who are graduates of approved medical or osteopathic schools and who are certified by their hospital.

4.44 Medical students of approved medical and osteopathic schools who are certified by their schools.

Section 11.0—COMPONENT SOCIETIES

11.41 Since membership in this Society is dependent on that of the component society, any reputable and ethical physician with the degree of Doctor of Medicine or Osteopathy, or their equivalent, from an accredited medical or osteopathic school, fully licensed to practice medicine and surgery by the Kansas State Board of Healing Arts, and the majority of his professional work being conducted in the state, shall have the privilege of applying for component society membership.

11.8 The Annual Report—The secretary of each component society will maintain a roster of its membership and of non-affiliated registered doctors of medicine or osteopathy within its boundaries. The roster must include for each member his address, medical or osteopathic school and date of graduation, date of license to practice in Kansas, and the dates of past changes in membership status. Only the names and addresses of non-members need be recorded.

RESOLUTION NO. 70-26

Dual Billing

WHEREAS, Forty-one (41) of the states have some form of dual billing of PAC dues with county, state and A.M.A. dues; and

WHEREAS, Many of them do this at the state level; and

WHEREAS, The results overwhelmingly show that the interest and support for the PAC and political action is enhanced in the states; therefore be it

Resolved, That the House of Delegates authorize the Kansas Medical Society to implement a more beneficial means of dual billing in Kansas.

RESOLUTION NO. 70-27

CBS "The Promise and The Practice"

WHEREAS, On April 21, 1970, the Columbia Broadcasting System saw fit to broadcast to the nation a commentary on the delivery of health services in the United States of America; and

WHEREAS, The Columbia Broadcasting System saw fit to illustrate their programs with examples demonstrating the extremes and certainly not the average; and

WHEREAS, The title, "Don't Get Sick in America," which was not only used as a title but in the conclusion of the presentation on April 21, 1970, may well result in irreparable consequences; and

WHEREAS, The portrayal of the delivery of health

care does not represent the delivery of health care in the state of Kansas; therefore be it

Resolved, That we, as physicians of Kansas, affirm to do all in our power to prevent health care in Kansas from deteriorating to the level depicted in the commentary and that we will devote our continued efforts toward innovative and successful ways of delivering good health care to the people of our state regardless of their individual economic circumstances; and be it further

Resolved, That a copy of this resolution be sent to the CBS, to each affiliate CBS station in Kansas, to the sponsors of the program, the FCC, the Congressional Delegation from Kansas, and to the American Medical Association.

RESOLUTION NO. 70-28

Conference of Student Professional Organizations

WHEREAS, The AMA asked this Society to evaluate the activities of the Student Professional Organization and to make recommendations regarding future AMA funding; and

WHEREAS, The Conference of Student Professional Organizations is not requesting further AMA funding; therefore be it

Resolved, That the Society forward the complete report of the liaison committee of the Kansas Medical Society to the proper AMA office; and be it further

Resolved, That the Society make no recommendation regarding further funding as such has not been requested; and be it further

Resolved, That the Kansas Medical Society commend the S.A.M.A. participants in the project for their efforts, accomplishments, and particularly for the intangible results which may not be thoroughly realized for years to come.

RESOLUTION NO. 70-29

Building Fund

WHEREAS, Some 1,400 dues-paying members paid \$50 each during 1969 with which to purchase an office for the Kansas Medical Society; and

WHEREAS, This money, together with the use of reserves the Society accumulated over the years, was sufficient to pay the purchase price; and

WHEREAS, One hundred forty-one (141) dues-paying members have not yet paid their portion of their 1969 dues even though they have at least three times been reminded of their obligation, once by the Councilor of their district; therefore be it

Resolved, That the Executive Office be directed to once again contact the delinquent members urging them to remit this portion of their dues; and be it further

Resolved, That the Executive Office shall at the middle of September advise each delinquent member of the consequences of failure of payment and thereafter transmit to the secretary of each component society the names of delinquent members and advise that after December 31, 1970, one full year beyond the requirement of the By-Laws, those physicians whose building fund dues have not been paid will no longer be members of the component society, of the Kansas Medical Society and of the American Medical Association; and be it further

Resolved, That in the event a member who has been assessed for the building fund shall leave the membership of the Society without paying this portion of dues and then later reapplies for membership, his application for membership shall be denied until the amount due the Society for the building fund is paid.

RESOLUTION NO. 70-30

Building Fund—New Members

Not adopted.

RESOLUTION NO. 70-31

The Commission for Scientific Study

WHEREAS, The By-Laws Chapter 91.1 state that each commission is comprised of eighteen (18) members and only one half of the membership is appointed in a single year; and

WHEREAS, This is considered a wise policy to assure continuity of commission activity; and

WHEREAS, There are now fourteen (14) recognized specialty societies with representation in the House of Delegates, a number of which are not presently represented on this commission; and

WHEREAS, This commission should sponsor and actively promote improved coordination between these specialty societies and serve as an inter-specialty liaison; therefore be it

Resolved, That the By-Laws be amended in Chapter 91.1 by deleting the first two sentences and inserting in their place "*Except for the commission for scientific study, each commission is comprised of eighteen (18) members. Except for the commission for scientific study, only one half of the membership is appointed in a single year.*", and that the remainder of this section remain unchanged; and be it further

Resolved, That Chapter 91.21 which presently names the prior committees that shall be appointed under this commission be deleted and in its place a new Chapter 91.21 be adopted as follows, "*The commission for scientific study shall consist of one member from each specialty society which is entitled to have a delegate to the House of Delegates and that such additional members shall be appointed to serve as chairmen of other studies as may be desired in the field of scientific study. The commission shall serve in a liaison capacity to promote the improved coordination between the Kansas Medical Society and specialty societies organized within this state. The first vice president will meet with this commission.*"

RESOLUTION NO. 70-32

Blue Shield Relations Committee

WHEREAS, The Blue Shield Relations Committee was originally appointed to serve as liaison between Blue Shield and practicing physicians within their council district; and

WHEREAS, This committee consists of a chairman and the chairman of each district committee which is selected by the component societies of the district; and

WHEREAS, The Blue Shield Relations Committee has been requested to perform a variety of other services and has accepted these responsibilities, both at the state committee level and most particularly at the district committee level; and

WHEREAS, These additional duties include local responsibility for Peer Review and for questions relating to utilization review, for review studies of cases submitted by the Kansas Health Insurance Council and for advice to the councilor who is occasionally requested to make recommendations regarding the State Selective Service Board; and

WHEREAS, Many of these important services are not related to Blue Shield; therefore be it

Resolved, That the name of this committee be changed to the Medical Services Advisory Committee; and be it further

Resolved, That the By-Laws be changed in Chapter 91.22, The Commission for Sociology and Economics, by deleting the words, "Blue Shield Relations," and adding in their place the words, "*The Medical Services Advisory Committee.*"

RESOLUTION NO. 70-33

State Meeting Program Committee

WHEREAS, For the present time the physical facilities for holding this State Meeting as now struc-

tured is limited to the three cities of Wichita, Topeka and Salina, and

WHEREAS, This means the host society becomes responsible for the development of a scientific or educational program more often, and

WHEREAS, It would seem that some coordination of these programs would be helpful and valuable, therefore be it

Resolved, That this House of Delegates authorize the Council to establish a State Meeting Program Committee consisting of two to be selected by each of the host societies, two selected by the Council from other than the host sites, and the President-elect and First Vice-President of the State Society, and be it further

Resolved, That the chairman of the committee be from the city and society that is hosting the meeting for the coming year and serve on the Commission on Society Organization for that year.

RESOLUTION NO. 70-34

Editor on Council

Not adopted.

RESOLUTION NO. 70-35

Physicians on Hospital Boards

WHEREAS, Physicians have a special obligation toward the operation of hospitals; and

WHEREAS, The Kansas Hospital Association has declared by resolution that it welcomes physician involvement in the management of hospitals; and

WHEREAS, The Joint Commission on Accreditation of Hospitals recommends that physicians participate in hospital planning and operation; and

WHEREAS, Kansas Statutes Annotated 19-1887 pertaining to county hospitals states in part "provided, however, that none of such trustees shall be practicing physicians or hold any state, county or city elective office"; and

WHEREAS, There may be other sections in the Kansas Law making similar prohibitions; therefore be it

Resolved, That the Kansas Medical Society through its members explain to the representatives and senators of the Kansas Legislature the fallacy of such prohibition and that every effort be made to eliminate the requirement that physicians may not serve on the Hospital Board of Trustees wherever such appears in the Kansas Statutes.

RESOLUTION NO. 70-36**Locum Tenens**

WHEREAS, The Kansas Board of Healing Arts adopted by rule the policy not to issue Locum Tenens permits in the future; and

WHEREAS, Such permits previously issued to physicians licensed in other states, although not in Kansas, for a period to extend not longer than ninety (90) days has been of assistance to physicians especially where there was only one physician in the community and to his patients; therefore be it

Resolved, That the Kansas Medical Society respectfully requests the Healing Arts Board to reconsider this action and to grant a permit to such physicians as hold a valid license in some other state to practice in Kansas for a period not longer than ninety (90) days; and be it further

Resolved, That a reply be sought from the Health Arts Board for presentation to the next meeting of the House of Delegates.

RESOLUTION NO. 70-37**Building Assessment**

Not adopted.

RESOLUTION NO. 70-38**Revision of the Kansas Relative Value Studies**

WHEREAS, The House of Delegates directed this committee, composed of representatives selected by each recognized specialty in Kansas, to prepare revisions in the 1966 edition of the Kansas Relative Value Studies; and

WHEREAS, Your committee has examined the new expanded California Relative Value Studies and finds it to contain improved precision of procedure definitions and five-digit identification numbers; and

WHEREAS, It is now learned that the American Medical Association is further expanding and refining procedure terminology and will affix to each an identification number, which material should be completed within a few weeks; and

WHEREAS, Your committee agrees there should be a nationally approved standard terminology and identifying numbers; therefore be it

Resolved, That this committee be directed to study the American Medical Association's document as soon as it becomes available and when each specialty organization, including the Academy of General Practice, approves those revisions in the sections ap-

plying to its specialty and after the committee, as a whole, has approved all recommended changes, this shall be submitted to the Council; and be it further

Resolved, The Council, if in agreement with recommendations of the committee, shall order the revised document to be printed and distributed to each member of the Kansas Medical Society and that the new revision shall at that time replace the 1966 edition of the Kansas Relative Value Study.

RESOLUTION NO. 70-39**Compulsory AMA Membership**

Not adopted.

RESOLUTION NO. 70-40**Medicaid Program**

Not adopted.

RESOLUTION NO. 70-41**Medical Care System for Kansas**

WHEREAS, There are many charges by the social planners and other groups that medical care is chaotic and has no system; and

WHEREAS, The Kansas Medical Society is desirous of developing the most efficient system of medical care possible; and

WHEREAS, Lay opinion and advice were requested and delivered to the Kansas Medical Society via an address by Mr. Whitley Austin at the 1969 State Medical Meeting, and in that address he expressed, "The public demands are three: to be able to secure medical services required; to get the best possible service the science of the day makes available; and to be billed for those services in a manner that the patient can understand and so that he may be able to pay.—They want more than a factory-line diagnostician; they want a man who will listen to their troubles, who will meet the psychic need that sickness so often creates and that healing so often demands.—In the country and the small town, the problem is to get any medical care at all; in the city, the problem is the worrisome one of choice—both the city man and the country man have one desire, that is to have confidence in the physician who treats him. Faith is often as important as pills."; and

WHEREAS, To that end he suggests a four-level system of medical care for Kansas, consisting of "(1) At the bottom level in the small towns, im-

mediate care should be provided by superior nurses. This would not be ideal, but it would meet a need now neglected—a well-trained nurse—trained well enough to know when a situation is beyond his or her capacities—operating under the direction of a physician—could provide much of the routine medical care required by the small town. (2) Physicians practicing in larger towns, practicing in cooperation with nurses above and in conjunction with skilled nursing homes; (3) Physicians including specialists in regional centers with fully equipped hospitals, laboratories, and skilled nursing homes; (4) Broad range of facilities and specialists as at Wichita and the Kansas University Medical Center, interlocked with state institutions and Research Center”; and

WHEREAS, “We have such a system now but it is loose-jointed—we need closer professional relationships—there should be transportation arrangements, understanding about costs, and a uniform billing system”; and

WHEREAS, He challenges the Kansas Medical Society, “The members of the Kansas Medical Society themselves should take the lead in organizing this four-level service rather than waiting for the federal bureaucrats to do it for them. Any remedy demands direction and organization, farseeing and unselfish action on the part of the medical profession. You are ethical men with scientific minds. I hope you will be as quick to take the initiative as to prescribe an antibiotic. It is as important to turn to new ways as to new drugs. And, to Kansas, placebos won’t do.”; therefore be it

Resolved, That,

(1) The Kansas Medical Society approve in principle such a four-level system of medical care, and

(2) The Kansas Medical Society direct the Commission for Health Services to make a special study of this four-level system of medical care.

RESOLUTION NO. 70-42

Resource Physicians Committee

WHEREAS, The Kansas Medical Society has indicated a desire that the program of the Kansas Crippled Children’s Commission be improved and expanded; and

WHEREAS, It is desirable to find a plan for the expansion of such services acceptable to the Kansas Medical Society; and

WHEREAS, A Resource Physicians Committee to the Medical Director of the Kansas Crippled Children’s Commission was appointed in accordance with Resolution No. 3 in 1968 which was charged with this responsibility; therefore be it

Resolved, That the president of the Kansas Medical Society expand the Resource Physicians Committee to the Medical Director of the Kansas Crippled Children’s Commission as necessary to represent all specialties which are presently or might be expected to be involved in the care of such children.

The president of the Kansas Medical Society select a chairman of the committee and charge him and the committee with the responsibility of a study of the program as it now exists in Kansas, the programs of neighboring states, the provisions of the amendments of the Social Security Act dealing with Crippled Children, the resources of the federal and state government and the desires of the state for the provision of such services in Kansas.

This committee make recommendations to the Council of the Kansas Medical Society in the fall of 1970 so that legislative proposals can be made to the Legislative Council for action in the next session of the legislature.

RESOLUTION NO. 70-43

Continuing Medical Education

Resolved, That the Commission on Education is directed to conduct an intensive study of the opportunities for and methods of continuing education for practicing physicians in Kansas and how the physician may be most strongly encouraged and rewarded for participation in professional self-improvement and continuing education programs; and be it further

Resolved, That the Commission on Education shall report its efforts and recommendations on this crucial matter to the House of Delegates at its next regularly constituted meeting.

RESOLUTION NO. 70-44

Representatives on the Welfare Board

WHEREAS, The Board of Social Welfare and its operating department in effect comprise the largest domestic consumer of medical services; and

WHEREAS, The interests of our citizens are best served by rational and medically sound policies in the medical service programs administered by the Board and the Department of Social Welfare; therefore be it

Resolved, That the Kansas Medical Society shall actively seek appointment by the governor of a practicing physician to the Board of Social Welfare.

RESOLUTION NO. 70-45**Legislative Testimony**

WHEREAS, Many crucial issues of medical concern before the Kansas legislature would be dealt with more effectively if the personal advice and counsel of the leadership of the profession were available and open communication between legislative leaders and leaders of our profession were maintained; therefore be it

Resolved, That,

(1) The Council of the Kansas Medical Society shall adopt an additional role as the functioning Legislative Committee of the Society;

(2) Operating in the role above, the Council will act as the sounding board on matters of concern among the membership and also as the medium for dissemination of all important information to the entire membership;

(3) The president of the Society shall actively seek the privilege and opportunity for personal testimony and communication by himself and other designated officers and members of the Society before and with the legislature and its committees considering matters of medical and health concern; all such exchanges shall become a matter of record before the Council.

RESOLUTION NO. 70-46**Continued Separation of the Kansas State Board of Social Welfare and the Kansas State Board of Health**

WHEREAS, The constituted and legislated missions of the Board of Social Welfare and the Board of Health and their separate operating departments are totally different in scope and orientation; and

WHEREAS, The separate identity of these bodies avoids creation of a budgetary and operational bureaucratic behemoth beyond effective comprehension and control of a single administration, any board of volunteer citizens, the state executive and the legislature; and

WHEREAS, It is highly desirable to avoid such concentration of fiscal resource and regulatory power in such vital areas within the structure of a single department where such power could tend to insulate both policy and operation from its initial purposes; and

WHEREAS, Appropriations for needed activities in the health area could well become subservient to those for other areas of concern of a combined department; therefore be it

Resolved, That the Kansas Medical Society ac-

tively supports continuation of separate identity of the Board of Social Welfare and the Board of Health, each with its separate operating department.

RESOLUTION NO. 70-47**Task Forces**

WHEREAS, Health and medical matters of public and professional concern are often best resolved by seeking a broad base of advice and counsel before policy is set; and

WHEREAS, Task forces of interested and concerned expert citizens have been shown to be effective in achieving the foregoing in a variety of settings; therefore be it

Resolved, That the Kansas Medical Society actively supports the concept of ad hoc task forces to study specific areas and matters of concern in the health and medical fields as they are encountered by the Boards of Health and Social Welfare in the conduct of their missions; and be it further

Resolved, That such task forces should not contain members who are salaried employees of the Kansas State Department of Health or the Kansas State Department of Social Welfare.

RESOLUTION NO. 70-48**Representation on Board of Health**

WHEREAS, Those citizens with the greatest interest in and most knowledge concerning matters affecting the health of the people of Kansas will be found among the physicians of Kansas; and

WHEREAS, The present composition of the Board of Health has served the needs of Kansas citizens well; therefore be it

Resolved, That the Kansas Medical Society strongly support a minimum of 50 per cent physician representation on the Board of Health.

RESOLUTION No. 70-49**Legislative Action Information**

WHEREAS, There is an increasing volume of legislation in Kansas proposed each year which is of concern to the Kansas Medical Society; and

WHEREAS, It is important that the Society be well informed about such legislation; and

WHEREAS, It is necessary that the appropriate committees of the legislature be aware of the position of the Kansas Medical Society when considering such matters; therefore be it

Resolved, That the Commission for Society Organization study

(1) The present methods of collecting and disseminating information regarding proposed legislation to the members of the Society;

(2) Study the present methods of informing the Executive Secretary of the position of the Society and his representation of that position to the legislature;

(3) Study alternate methods of informing the Society regarding legislation and representing those views to the legislature;

(4) Present proposals regarding the improvement of those functions to be presented to the fall meeting of the Council of the Society.

RESOLUTION NO. 70-50

Chiropractic

WHEREAS, Practitioners of chiropractic are currently engaged in a series of aggressive new legislative campaigns to secure equality and parity with the medical profession in broad areas of health care; and

WHEREAS, Current Kansas law licensing chiropractors as practitioners of a healing art is false and misleading as chiropractic treatment methods cannot or will not submit themselves to the judgment of scientific research to prove that any actual healing is accomplished; and

WHEREAS, The Kansas Medical Society has an obligation to protect the public from fraudulent medical superstitions which have no basis in fact by dissociating themselves from such practices; therefore be it

Resolved, That

(1) KMS begin a vigorous effort to inform the legislature and the public about the difference between scientific medicine and chiropractic;

(2) KMS begin an immediate effort to pass legislation to prohibit the use of x-ray in the pursuit of any invalid or irrational healing procedure;

(3) KMS initiate and cooperate with state government in an orderly program to withdraw chiropractic licenses;

(4) KMS study needs for personnel in physiotherapy and physical rehabilitation and assist in the development of retraining programs for chiropractors who wish to remain in the health field where they could serve an important public need and promote scientific progress;

(5) KMS go on record as supporting the con-

cept that the state of Kansas has a right to insist that the health care laws be in accordance with scientific facts.

RESOLUTION NO. 70-51

Interns

WHEREAS, Resolution 70-24 amends the By-Laws to allow chartering of a Student Medical Society; and

WHEREAS, This resolution is worded to allow membership only to undergraduate medical students; and

WHEREAS, Interns may be classified as students; therefore be it

Resolved, That interns be considered eligible for membership in this Student Medical Society.

RESOLUTION NO. 70-52

Fluoridation of Public Water Supplies

WHEREAS, Fluoridation of public water supplies has been proven repeatedly to be a safe and effective preventive method of reducing the incidence of dental decay; and

WHEREAS, Fluoridation has been approved by all major qualified health and scientific organizations in this nation; and

WHEREAS, Over one million people in the state of Kansas now enjoy the benefits of fluoridation of their water supplies; and

WHEREAS, Reductions in dentists' time and treatment needs for children in fluoridated communities have resulted in lower costs for public welfare programs, as well as for parents; and

WHEREAS, Seven states have enacted legislation requiring mandatory fluoridation of public water supplies; and

WHEREAS, The increasing number of individuals receiving public funded dental services has resulted in spiraling costs to the state and have made dental health of Kansas citizens an increasing concern to the state; and

WHEREAS, The Kansas Medical Society endorsed the principle of fluoridation of water supplies by its action in February 1952; therefore, be it

Resolved, That the Kansas Medical Society endorses the principle of mandatory fluoridation of public water supplies where the natural fluoride content of the water is not sufficient to assure proper protection against dental disease, and that such fluoridation be in accordance with standards and procedures established by the State Board of Health.

RESOLUTION NO. 70-53

(This resolution was not adopted, but was forwarded to the Council.)

Policy on Society Contributions**PREAMBLE**

Because this Society is frequently requested to give financial support to organizations operating in the field of health, the Council directed this Committee to prepare a statement of policy of contributions for consideration by the House of Delegates.

Therefore Be It Resolved, That the following statement is the policy of the Kansas Medical Society.

MEMBERSHIP DUES

The Kansas Medical Society should identify itself in support of such organizations as are determined by the Council to have objectives in keeping with those of this Society, which provide a marked benefit to the people of Kansas or to the members of this Society and in which membership is effected through the payment of a specified annual amount of dues. Examples, as a guide for the Council, but not intended as a limitation, are the Kansas State Chamber of Commerce, Aces and Deuces, SAMA, etc.

SUPPORT FOR RELATED ORGANIZATIONS

Organizations closely related to this Society, for which committees from this Society serve as advisors, or whose activities are coordinated with those of this Society may be supported by contributions at such times, in such amounts and for such purposes as the Council considers wise. Examples to define organizations included in this category are the Woman's Auxiliary to the Kansas Medical Society, The Kansas Medical Assistants Society, the Kansas SAMA Chapter, the KaMPAC Educational Fund, etc.

ADVERTISING

The purchase of advertising space in magazines or Journals is not considered to be a contribution but an expenditure designed to achieve a result. Examples—messages printed in the *4-H Journal*, *Jayhawker*, M.D., the Health Careers handbook, should be considered by the Council on their anticipated value.

CONTRIBUTIONS TO OTHER ORGANIZATIONS

There are numerous worthwhile organizations to which this Society is invited to make contributions. It is recommended that individual members participate in and contribute to these organizations. The Kansas Medical Society also is nonprofit and since gifts in support of charitable and related associations

represent personal endorsement, the Kansas Medical Society will not contribute money to any organization, society or group of this type. Examples to guide the Council, but not by way of considering this list inclusive, are voluntary health associations, the School Health Council, the Health Careers Council, etc.

RESOLUTION NO. 70-54**Handicapped Children**

Not adopted.

RESOLUTION NO. 70-55**Review of District Council Structure**

WHEREAS, The Council of the Kansas Medical Society transacts business on behalf of the Society between the annual or special sessions of the House of Delegates; and

WHEREAS, These interim decisions should reflect the feelings and opinions of the majority of Kansas physicians; and

WHEREAS, The concept of one man-one vote has been accepted and implemented in other organizational structures; therefore, be it

Resolved, That the State Society's Commission of Society Organization be directed to review the existing District Council structure and develop a plan which will provide representation at the Council level on a basis proportionate to the number of members in each Councilor District; and be it further

Resolved, That the Society's Committee on Constitution and Bylaws formulate accordingly the necessary changes in the State's Bylaws and submit its report at the 1971 House of Delegates for final action.

RESOLUTION NO. 70-56

(Referred back to Committee on Blue Shield Study.)

State Blue Shield Relations Committee

WHEREAS, The primary responsibility of the State Blue Shield Relations Committee is to provide formal liaison between the Kansas Medical Society and Kansas Blue Shield on major questions concerning policy and planning as it mutually affects Kansas physicians and Blue Shield; and

WHEREAS, The concept of reapportionment on the basis of one man-one vote has been recognized and implemented at the state and national levels, and

WHEREAS, The American Medical Association and the Kansas Medical Society House of Delegates provide for democratic representation on a proportionate basis; therefore, be it

Resolved, That the Society's Commission for Society Organization be directed to review the existing organizational structure of the State Blue Shield Relations Committee and submit to the 1971 House of Delegates a formula which would provide physician representation on a basis proportionate to the number of physicians practicing in each Councilor District.

RESOLUTION NO. 70-57

(Referred back to Committee on Blue Shield Study.)

Blue Shield Board of Directors

WHEREAS, Kansas Blue Shield is considered the physicians' plan in the eyes of most subscribers; and

WHEREAS, The Blue Shield Board of Directors serves as the policy and decision-making body, composed of 14 consumers and 25 physicians—one from each of the 18 Councilor Districts, the president and president-elect of the Kansas Medical Society, and five (Executive Committee members) elected by the Blue Shield Board from board members who have previously served as district representatives; and

WHEREAS, All policies and decisions made should be in the best interest of Blue Shield subscribers and reflect the feelings and opinions of the majority of Kansas physicians; therefore, be it

Resolved, That the State Society's Commission of Society Organization be directed to review the existing structure of the Blue Shield Board of Directors and develop a plan which will provide physician representation on the Blue Shield Board of Directors on a basis proportionate to the number of physicians practicing in each Councilor District; and be it further

Resolved, That the Commission's report be submitted at the 1971 House of Delegates for consideration.

RESOLUTION NO. 70-58

Reimbursement for Services Provided By Non-Participating Physicians

WHEREAS, Under current Blue Shield policy, the patient receiving professional services from a non-participating physician is penalized in that he is only partially reimbursed for a procedure, while the patient having like coverage and cared for by a par-

ticipating physician is credited with payment in full; and

WHEREAS, This reimbursement procedure is inequitable, is not in the best interest of the subscriber and effects adversely on the profession as a whole; therefore, be it

Resolved, That the Society's Commission on Sociology and Economics be directed to review the current policy concerning reimbursement of non-participating physicians' services; and be it further

Resolved, That the Commission develop an equitable method of reimbursement based on the subscriber's contract coverage regardless of who provides the care; and be it further

Resolved, That the Commission's report be submitted to the Kansas Medical Society Council as soon as possible for final consideration and implementation.

RESOLUTION NO. 70-59

(Referred back to Committee on Blue Shield Study.)

Blue Shield Advertising

WHEREAS, Kansas Blue Shield is a non-profit organization with operating funds derived from subscriber premiums; therefore, be it

Resolved, That the Society's Commission on Sociology and Economics be directed to review the overall expenditures allocated to advertising; and be it further

Resolved, That the Commission review all current advertising to insure that the message conveyed to Kansas citizens is factual from the standpoint of covered benefits, payment structures, and the difference between participating and non-participating physicians; and be it further

Resolved, That all advertisements concerning Blue Shield be clearly separated from those of Blue Cross.

RESOLUTION NO. 70-60

(Referred back to Committee on Blue Shield Study.)

Co-Insurance

WHEREAS, Kansas Blue Shield has initiated a co-insurance feature in all individual subscriber contracts; and

WHEREAS, It is the opinion of the medical profession that this is the best mechanism for controlling over-utilization and controlling rising health care costs; therefore, be it

Resolved, That the Kansas Medical Society oppose

the concept of first dollar-last dollar health coverage; and be it further

Resolved, That the Kansas Medical Society endorse the concept of co-insurance and recommend that this feature be added to all Blue Shield plans, and be it further

Resolved, That a copy of this resolution be forwarded to the president of the National Blue Shield.

RESOLUTION NO. 70-61

Kansas Crippled Children's Commission

Not adopted.

RESOLUTION NO. 70-62

Separation of Blue Cross-Blue Shield

WHEREAS, The 1968 House of Delegates of the Kansas Medical Society directed that there be an investigation of Blue Shield; and

WHEREAS, This has been assigned to a special committee of the Sociology and Economics Commission; and

WHEREAS, It seems to this committee, after much study, that the following be true:

(1) The status of Kansas Physicians' Service as an active member of the National Association of Blue Shield Plans, is contingent upon the continued "substantial support of the Kansas Medical Society" and participation agreements with a majority of the physicians in the state of Kansas, and the members of the Kansas Medical Society have the right and duty to exercise substantial control over Kansas Blue Shield policies.

(2) In the public mind, Kansas Blue Shield appears to be a part of Kansas Blue Cross. The Kansas participating physician is often held responsible for Kansas Blue Cross rate increases and for other policies of Kansas Blue Cross over which he has little or no control.

(3) The economical Blue Shield rates representing frugality on the part of the participating physicians, and some contractual commitment on their part in holding the cost of medical care to Blue Shield subscribers down, are frequently used as a lever to promote the sales of Kansas Blue Cross contracts.

(4) The policies and plans of Kansas Blue Cross grow continually closer to those of National Blue Cross.

(5) The plans, expansions, and policies of Na-

tional Blue Cross grow continually closer to those of the American Hospital Association, of the Department of Health, Education and Welfare, and other Social thinkers holding views dissimilar to that of the Kansas physicians.

(6) By virtue of the sheer size of monies handled respectively by the Kansas Blue Cross and the Kansas Blue Shield, there is a pronounced tendency for the good of the former to dominate that of the latter in matter of plans, policies, and the concern exhibited over them by their joint administration.

(7) Board members of the Kansas Blue Shield are not always well informed by the joint Blue Cross-Blue Shield administration as to the purposes and origins of various plans and policies.

(8) The Kansas Medical Society in the past has exerted little or no influence on Kansas Blue Shield either in the selection of board members and members of District Blue Shield Relations Committees or in originating plans and policies.

Therefore be it

Resolved,

(1) That this House of Delegates direct the Executive Committee of the Council of the Kansas Medical Society to exercise care, prudence, and its influence in the selection of Kansas Blue Shield board members so that interested and well informed physicians can be placed on the board.

(2) That the House of Delegates, the Council and its Executive Committee offer instruction and direction to all Blue Shield board members as to the desires of the practicing physicians in Kansas.

(3) The Kansas Medical Society should be more active through its House of Delegates, the Council and its Executive Committee in the origination of suggestions to the Kansas Blue Shield board for new policies consonant with the wishes of Kansas physicians.

(4) That the House of Delegates adopt as the policy of the Kansas Medical Society the concept of a division at an administrative level of Blue Cross and Blue Shield with each having a separate director.

(5) The House of Delegates direct similar efforts be made to promote a clear distinction in the minds of the general public as to the difference between Blue Cross and Blue Shield.

(6) That the actions of this House be made known widely in this regard with the particular objective of informing the Blue Shield Board of Directors of the position of the Kansas Medical Society.

(7) The House of Delegates receive an in-depth financial report and budget annually.

(8) That the Blue Shield Study Committee be continued.

RESOLUTION NO. 70-63**The Himler Report**

WHEREAS, "The report of the Committee on Planning and Development" (the so-called Himler Report), while offering many excellent ideas for the reorganization of the American Medical Association is couched generally in terms not acceptable to the majority of the membership; and

WHEREAS, The membership of the Kansas Medical Society, by a large majority, is committed to a continuing improvement of the present methods of rendering health care—methods which have brought us to a pinnacle of excellence acknowledged by the medical professions of the rest of the free world as exemplified by their desire to emulate and train among us; and

WHEREAS, The report contains a very significant provision for the establishment of a "National Academy of Health Professions for Research and Policy," and while the report denies the loss of the policy and the planning control that does, to some extent, now rest in the American Medical Association House of Delegates, it is apparent that practically such control would be further diluted or lost entirely; be it therefore

Resolved, That this House inform the Kansas delegates to the American Medical Association that it is the sense of the House that any implementation of the above mentioned report must be scrutinized very carefully to be certain it conforms with established Kansas principles of free medical practice; and be it further

Resolved, That the House inform the Kansas delegates that it is opposed to the concept of a National Academy.

RESOLUTION NO. 70-64**Action Testing the Legality of Proration**

WHEREAS, The Medical Society of Sedgwick County has filed suit against the State Department of Social Welfare in its belief that the arbitrary act of proration of fees was illegal; and

WHEREAS, It would be most appropriate for the Kansas Medical Society to also join as plaintiffs in this suit reflecting the beliefs of its membership; and

WHEREAS, The motion for dismissal of this suit by the Department of Social Welfare has been denied; and

WHEREAS, The suit will go forward; therefore be it

Resolved, That the Kansas Medical Society join

with the Medical Society of Sedgwick County as a plaintiff in their suit against the Board and the Department of Social Welfare.

RESOLUTION NO. 70-65

(This resolution was tabled.)

Kansas Blue Shield

WHEREAS, Kansas Blue Shield was originally formed as a physician service for the medically indigent of Kansas; and

WHEREAS, The Kansas Medical Society has no legal control over Kansas Blue Shield; and

WHEREAS, Kansas Blue Shield is now the largest provider of prepaid health services in Kansas, serviced by individual contracts with physicians designated as participating physicians; and

WHEREAS, This relationship between the Kansas Medical Society and Kansas Blue Shield has consistently created division and dissention within the membership of the Kansas Medical Society and county medical societies; therefore, be it

Resolved, That the Kansas Medical Society withdraw unified support to Kansas Blue Shield and observe the same relationship with Kansas Blue Shield as with the other reputable private health insurance companies of Kansas; and be it further

Resolved, That the Kansas Blue Shield relationship to the Kansas physician be on an individual basis for the complete service benefits under the Prevailing Charge Plan, and be it further

Resolved, That new contracts be renegotiated between Blue Shield and the individual physician, as was 1966 contracts which were submitted under auspices of Kansas Medical Society, and be it further

Resolved, That when Kansas Blue Shield seeks medical guidance, it be through the county medical society of the area involved.

RESOLUTION NO. 70-66

(Referred for study to the Commission for Society Organization.)

Medical Politics

Resolved, The candidates for offices within the Kansas Medical Society shall, at least sixty (60) days prior to election, have their views on major issues confronting the profession published in the JOURNAL OF THE KANSAS MEDICAL SOCIETY. Such views can be developed by an appropriate questionnaire, prepared by the Editorial Board of the JOURNAL and submitted to each candidate for response.

RESOLUTION NO. 70-67

(Referred for study to the Commission for Society Organization.)

Second Vice Presidents

Resolved, The By-Laws be modified so that the Kansas Medical Society shall have two second vice presidents having equal privilege and responsibility.

RESOLUTION NO. 70-68

(Referred for study to the Commission for Society Organization.)

Revision of Section 6.6

Resolved, That Section 6.6 of the By-Laws titled Nominations be modified in its first sentence as follows: The words "annual session by ballot from the past presidents who are still members of this Society" are changed to read "annual session by ballot by the Voting Council."

RESOLUTION NO. 70-69**Presidential Compensation**

Resolved, The president of the Kansas Medical Society shall be compensated for his time and efforts at the rate of six thousand dollars (\$6,000) annually, plus expenses as now paid, to begin with the year 1970-71.

RESOLUTION NO. 70-70

(Referred for study to the Commission for Society Organization.)

Solicitation of Votes

Resolved, Section 6.73 of the By-Laws of the Kansas Medical Society titled "Solicitation. . . . Any member judged by the Council to have solicited votes for himself shall be ineligible for office for two (2) years." be rescinded.

RESOLUTION NO. 70-71**Medicaid Program**

Not adopted.

RESOLUTION NO. 70-72**Dispensary at the Legislature**

Resolved, That the Kansas Medical Society create a medical dispensary at the Kansas Legislature to pro-

vide emergency and minor care to the state legislators and that this dispensary be manned by one physician daily, chosen from a list of volunteers from all over the state; and be it further

Resolved, That if this resolution is passed by the House it be referred to the appropriate commission for implementation.

RESOLUTION NO. 70-73

(Referred for study to the Committee on Fee Schedules.)

Relative Value Schedule

Resolved, That the Kansas Relative Value Schedule add the American Society of Anesthesiologists modifying factor for age, physical status and emergency status of the 1967 American Society of Anesthesiologists Relative Fee Schedule.

RESOLUTION NO. 70-74**Medical Use of X-Rays**

WHEREAS, The utilization of x-rays in medicine as a fundamental diagnostic and therapeutic tool continues to accelerate; and

WHEREAS, The medical profession bears a major responsibility for maintaining the genetically significant exposure of our citizenry at a minimum level through prudent use of x-rays as a diagnostic and therapeutic tool; therefore be it

Resolved, That

(1) Every person who exposes humans to radiation for diagnostic or therapeutic purposes should possess *demonstrated* proficiency in all aspects of the uses of radiation which he performs or supervises.

(2) The American Board certified or equally qualified medical specialist in radiology at the professional level and the registered radiologic technologist (ARRT) at the technical level can be considered to be generally qualified to perform all types of radiologic activity at their respective levels of training and responsibility.

(3) All other persons, both professional and technical, should be required to effectively demonstrate competence in all aspects of those specific procedures employing radiation which they intend to perform or supervise. It is recognized, however, that such persons need not be qualified in the general

sense to perform or supervise all aspects of every available radiologic procedure.

And be it further

Resolved, That the Kansas Medical Society, in cooperation with the Kansas Radiological Society, the Kansas Society of Radiologic Technologists, and the Board of Health of the State of Kansas, shall actively seek to formulate a program of basic education and effective certification in the use of x-rays which is in the public interest and consonant with the prerogatives and traditions of the medical profession.

RESOLUTION NO. 70-75

(Referred to the Committee on Fee Schedules.)

Cooperative Study of Codes and Nomenclature

WHEREAS, It is in the interests of Medicine that descriptions of professional services be maintained and updated to reflect current professional practice; and,

WHEREAS, The continuing improvement of coding and nomenclature is essential to the effective operation of prepayment programs, particularly those operating under customary and prevailing charge concepts, and it is desirable that common procedural terminology be used by both the medical profession and organizations engaged in the prepayment of health care; and

WHEREAS, There are current efforts underway to improve coding and nomenclature, both under the auspices of medical groups and prepayment agencies, and it would be mutually advantageous to coordinate these studies; therefore be it

Resolved, That the Kansas Medical Society's committees charged with the responsibilities for developing procedure codes and nomenclature work cooperatively with Kansas Blue Shield in a joint study of means by which systems for coding and describing professional services are coordinated; and be it further

Resolved, That recommendations from this study be presented to the House of Delegates at a later date.

RESOLUTION NO. 70-76

Support for Research and Education in Cancer

Not adopted.

RESOLUTION NO. 70-77

To Commend Dr. George Wolf

WHEREAS, Dr. George Wolf has resigned his position as Dean and Provost of KUMC and will soon leave our midst, and

WHEREAS, Dr. Wolf has served the Medical Center and the physicians of Kansas with distinction in the course of medical education; and

WHEREAS, The Kansas Medical Society has known Dr. Wolf as a friend, educator and colleague; therefore be it

Resolved, That the Kansas Medical Society take formal notice of his leaving Kansas and the president express to him our gratitude and appreciation for his service and wish him well in his new career; and be it further

Resolved, That a copy of this resolution be included in the minutes of this House and that a copy be sent to Dr. George Wolf by the president.

RESOLUTION NO. 70-78

To Commend Dr. Jack Walker

WHEREAS, The Kansas Medical Society has enjoyed a long and enduring warm relationship with the K.U. Medical Center; and

WHEREAS, Many outstanding programs for the betterment of the health of the citizens of the state have resulted from this cooperation; and

WHEREAS, The Associate Dean of KUMC has sat in our midst as a friend, counsellor and colleague for the past seven years; therefore, be it

Resolved, That the president of the Kansas Medical Society formally express its appreciation to the chancellor of the University of Kansas for the cooperation and assistance of the Medical Center and particularly for the dedicated service of Dr. Jack Walker in furthering these goals.

RESOLUTION NO. 70-79

Thanking the Medical Society of Sedgwick County

WHEREAS, This 1970 annual meeting of the Kansas Medical Society has been tremendously successful from the standpoint of program and interest by the delegates; therefore be it

Resolved, That the House of Delegates express its thanks to the Medical Society of Sedgwick County and its members who have been so gracious in hosting the meeting.

The Council

Report of Meeting Held May 6, 1970

A meeting of the Council was held at the Broadview Hotel, Wichita, immediately upon the conclusion of the House of Delegates.

Present were Francis T. Collins, President; T. P. Butcher, C. C. Conard, R. F. Conard, H. F. Coulter, S. S. Daehnke, G. W. Fields, K. L. Graham, R. H. Greer, R. H. Hill, J. D. Huff, R. D. Hughes, M. R. Knapp, C. M. Lessenden, Jr., J. J. Marchbanks, S. C. McCrae, J. C. Mitchell, G. L. Mowry, W. E. Myers, R. H. O'Donnell, L. R. Pyle, W. J. Reals, W. G. Rinehart, W. R. Roy, Leland Speer, E. T. Siler, M. O. Steffen, T. F. Taylor, W. O. Wallace, F. P. Wolff, and E. D. Yoder.

Also present were Mr. David Weihaupt, AMA Field Representative, Mr. R. G. Swenson and Mr. Oliver Ebel.

Following is a brief summary of the actions taken by the Council. A complete report of the meeting is on file at the executive office.

1. In reply to a request received from the Kansas Chapter of SAMA, a motion was made and seconded that the Society send SAMA \$150 with which to defray the expenses of the delegates to their national convention.

2. Dr. Orville R. Clark and Dr. Richard Greer were re-elected to three-year terms on the Editorial Board.

3. Dr. David E. Gray was unanimously elected to a one-year term as editor of the JOURNAL, replacing Dr. Clark who resigned after serving 18 years as editor.

4. Resolution No. 70-33, adopted by the House of Delegates, directs the Council to select two members from cities in which state meetings are not held to serve on the State Meeting Program Committee. The motion was made and seconded that the Executive Committee select these two members. This motion carried.

5. A contribution of \$500 to the KaMPAC educational fund was approved.

6. The Council was reminded that the House of Delegates approved the public information program and authorized the firm of Parkinson and Associates, Wichita, to perform this service. The annual cost will be \$11,100. The motion was made, seconded and carried that the Council approve this expenditure for a six months period and that the Council review the program at a later meeting before the six months had expired.

7. Since the Cancer Society will no longer be able to perform the complete mailing service for the Society, the motion was made, seconded and carried that the Building Committee be authorized to purchase the necessary mailing equipment for use in the executive office.

8. The minutes of the Executive Committee will be sent to the Councilors after each meeting of the Executive Committee.

9. Dr. Collins asked the Council to advise him how the Kansas Medical Society would unite with the Medical Society of Sedgwick County in the lawsuit as directed by the House of Delegates. A motion was made and seconded, directing the Executive Committee to determine how the Society enters the lawsuit as a plaintiff. The motion carried.

Dr. Collins then made a brief report concerning his plans for the coming year. He stated it was his purpose to follow the Constitution and By-Laws, exerting every possible effort to unite the Society. He charged the individual councilors to more directly represent their district and the wishes of the physicians of their area. He said Action would be the key word of this year:

A—APPLY awareness and knowledge; evaluate and recommend solutions.

C—stands for COMMUNICATION. It is essential that the Society be informed. One effort to accomplish this will be the introduction of a monthly president's letter to the membership.

T—stands for TEACH. It is hoped the Society will establish improved liaison with specialty sections, with paramedical groups and other organizations.

I—INVOLVEMENT in the delivery of services and in changes where change is for the better.

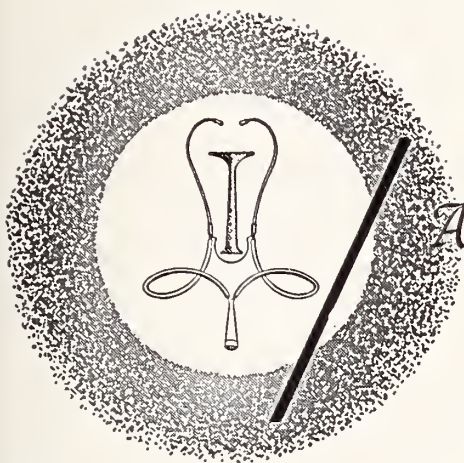
O—means ORGANIZATION and that is the component societies, Kansas Medical Society and the American Medical Association representing all Kansas physicians.

N—stands for NOW. Medicine is on the threshold of challenge.

Dr. Collins said in addition to serving the Kansas Medical Society as its Board of Directors he hoped the councilors would become involved with public relations in their area. He hoped they would serve in a liaison capacity between the membership and the Welfare program. They also were advisors to Selective Service. He wanted them to assist in establishing productive utilization and peer review programs, and, finally, they are the liaison between the Society and its members.

Dr. Collins stated a telephone answering service will be added to the telephone system at the executive office so that any one may call at any time during hours when the office is not open. Requests will be answered on the next working day.

There being no further business, the meeting was adjourned.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the DOCTOR'S CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

JUNE

- June 21-25 American Medical Association, Chicago. Write: Ernest B. Howard, M.D., Exec. Vice President, 535 N. Dearborn, Chicago 60610.
- June 21-25 Woman's Auxiliary to the American Medical Association, Drake Hotel, Chicago. Write: Miss Margaret N. Wolfe, Secretary, 535 N. Dearborn, Chicago 60610.

JULY

- July 17-18 Rocky Mountain Cancer Conference, Brown Palace Hotel, Denver. Executive Secretary: Donald G. Derry, Colorado Medical Society, 1809 E. 18th Avenue, Denver 80218.
- July 27-29 Postgraduate medical assembly of South Texas, Astroworld Motor Hotel, Houston. Write: Mrs. W. H. Dahme, Exec. Secretary, Texas Medical Center, 209 Jesse H. Jones Library Building, Houston 77025.

AUGUST

- Aug. 12-15 World Conference on General Practice, Palmer House, Chicago. Write Mac F. Cahal, J.D., Executive Director, Volker Blvd. at Brookside, Kansas City, Missouri 64112.
- Aug. 20-22 Rocky Mountain Radiological Society, Brown Palace Hotel, Denver. For information write Lorenz R. Wurtzebach, M.D., 4200 E. Ninth Ave., Denver 80220.

- Aug. 20-22 Ninth National Conference on Therapies for Advanced Cancers, University of Wisconsin Postgraduate Center, Madison. For information write R. J. Samp, M.D., University Hospitals, Madison, Wisconsin 53706.

POSTGRADUATE EDUCATION

University of Colorado:

- July 6-9 *Ophthalmology (Estes Park)*
- July 19-22 *Pediatrics (Aspen)*
- July 27-31 *Internal Medicine (Estes Park)*

For further information write the Office of Postgraduate Medical Education, University of Colorado School of Medicine, 4200 East 9th Ave., Denver 80220.

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Topeka, Kansas 66612**



Book REVIEWS

TOBACCO AND YOUR HEALTH, THE SMOKING CONTROVERSY by Harold S. Diehl. McGraw-Hill Book Company, New York. 224 pages. Illustrated. \$4.95.

As Dr. Diehl admitted in his book, I too am prejudiced against tobacco and it will show in my comments.

If everyone who is interested in personal health and public health had been listening and watching carefully for the past 15 years, this book would not have needed to be written. Dr. Diehl was dean of medical sciences and professor of public health at the University of Minnesota for 23 years. Out of that vast experience he came to believe that cancer and related illnesses represent a major health problem area that demands solution. In 1958, when he left the university, he went to the American Cancer Society as senior vice-president over Research and Medical Affairs and also as deputy executive vice-president. From that vantage point he watched and listened with his attention focused on smoking and ill health in terms of cigarette smoking and its relationship to cancer, as well as other diseases and disabilities. In spite of all he has learned from his watching and listening, contact with the public has convinced him that the general public continues to know little of the actual related medical facts and believe even less. The book was written to explore questions and lack of understanding that continue to trouble people relative to smoking—cigarette smoking!

It is all there! In spite of his strong convictions against cigarette smoking, Dr. Diehl has attempted to include both sides of the controversy. The book begins with the official conclusions that have been derived from the amassed data on the effects of cigarette smoking:

Cigarette smoking is the greatest preventable cause of illness, disability and premature death in this

country. (The Surgeon General of the United States Public Health Service.)

No other single factor kills so many Americans as cigarette smoking. . . . Bullets, germs and viruses are killers; but for Americans cigarettes are more deadly than any of them. No single known lethal agent is as deadly as the cigarette. (Commissioner of Health, State of New York.)

Cigarette smoking is, without question, the greatest single public health problem this nation has ever faced. (The Chief of the Thoracic Surgery Division of New York's Roswell Park Memorial (cancer) Institute.)

Cigarette smoking is one of the greatest threats to well being in modern times. Every appropriate preventive tool, every new, more effective method that can be devised, must be employed to stop this epidemic from spreading further among our young people, and roll it back from the adults. . . . It doesn't take long for this "social" habit to progress into full-fledged dependence. The boys and girls who become habituated are establishing an addiction that can kill or cripple them at a time when their rewards and contributions should be the greatest, with the loss not only theirs but society's as well. (The Director of Health of California.)

We can be certain that many more than 50,000 deaths a year in England and Wales are directly due to cigarette smoking and that of these deaths the number occurring before the age of 65 is sufficient to cause annually the loss at least of 150,000 years of working life. In addition to this there are the years of progressive disability, so characteristic of chronic bronchitis that some people say that death from lung cancer is the lesser evil. (Sir George Godber, The Chief Medical Officer of the Ministry of Health of Great Britain.)

The Association of State and Territorial Health Officers of the United States recommends, "that its members establish and carry out an effective program aimed at bringing under control the habit of cigarette smoking, thereby improving the health and well-being of the people of their states by reducing sickness, suffering, loss of earning power, and premature death."

The American Health Association has stated that "cigarette smoking is a major factor in coronary health

disease," and that "the use of tobacco in all forms is a cause of peripheral vascular disease." The National Tuberculosis and Respiratory Disease Association has concluded that "the risk of disability from chronic bronchitis, emphysema and certain other diseases is much greater among cigarette smokers than among nonsmokers."

The American Medical Association has stated that "cigarette smoking is a serious health hazard."

The American Public Health Association has made several statements including: "The health hazard of smoking is an accepted medical fact. . . . Immediate remedial action is essential to prevent thousands of unnecessary deaths."

Dr. Diehl includes a historical view of the use of tobacco and of the beginning awareness of the destructive side effects of the pleasure of tobacco, particularly cigarettes. He includes the relevant medical facts about the relationship of cigarette smoking in terms of all the implicated illnesses in organ systems. He includes the facts in terms of death and morbidity. He includes the facts in terms of suffering and lost personal income and sick day loss to our national product. He includes all the data that add up to the simple conclusion that the medical facts must be personally relevant to everyone who smokes or is contemplating starting smoking.

In his attempt to be fair, Dr. Diehl has included the dissenting opinions about cigarette smoking. But, it is next to impossible to look at the facts without coming to the conclusion that each person, in exercising his right to use his own personal logic in relationship to those facts, must come to a ruling against cigarette smoking, unless he is looking for a quicker demise than natural forces might otherwise lead him to, and unless he is an absolute and complete hermit without any responsibilities to any other human organisms.

To round off his effort, Dr. Diehl includes material on the psychological and social aspects of smoking, the government's responsibility and actions, the activities of the tobacco industry. He even includes suggestions for the use of those who would like to give up cigarettes and he includes a table on the tar and nicotine contents of certain brands.

This book belongs on the pile of reading material in every physician's outer office and it should be dis-

played in a prominent place among his books in his consultation room. The content of this book should be punctuated by the fact that no physician should ever again provide an ambiguous and indecisive model by smoking in front of a patient and he should use this book to help him in his efforts to not allow his patients to work against him in his efforts to heal and maintain health by way of the sabotage of inhaling tobacco smoke.

Every physician should have been watching and listening during the last 15 years like our colleague, Dr. Diehl, and we should have been firmly telling our patients the same conclusions that Dr. Diehl has reached and has been telling. If we all had been, then we would all be that much further down the road in this controversy and inevitable struggle and the battle that we must mount and win. It just doesn't make logical sense for physicians to knock themselves out in behalf of individuals, who by virtue of holding on to one personal gratification habit, can wipe out for themselves the realization of the benefits of the last half century of medical progress.—R.E.S.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

Alfredo Aucar, M.D.
A. C. Office Building
Arkansas City, Kansas
67005

Paul H. Rouse, M.D.
Kansas State Industrial
Reformatory
Hutchinson, Kansas 67501

Kenneth D. Austin, M.D.
1011 Center Street
Goodland, Kansas 67735

James W. Wiggs, M.D.
3515 Broadway
Great Bend, Kansas 67530

Edward L. Jones, M.D.
3515 Broadway
Great Bend, Kansas 67530

Hugh S. Mathewson,
M.D.
K.U. Medical Center
Kansas City, Kansas 66103

Keith A. Wolfenbarger,
M.D.
351 West 10th
Hoisington, Kansas 67544

Bernard J. Melia, Jr.,
M.D.
3700 West 83rd Street
Prairie Village, Kansas
66208

Kenneth P. Zabel, M.D.
207 Professional Building
Pittsburg, Kansas 66762

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When you change your address, be sure to notify the JOURNAL, preferably one month in advance. In that way, you'll get every issue on time. Simply print your name, old address, and new address, on a postal card and send to: THE JOURNAL OF THE KANSAS MEDICAL SOCIETY, 1300 Topeka Avenue, Topeka, Kansas 66612.

KANSAS STATE DEPARTMENT OF HEALTH

TOPEKA, KANSAS

Epidemiology & Disease Control Services—Registration & Health Statistics Services—Kansas Morbidity Incidence

Summary of Cases Reported in March, 1970 and 1969

Diseases	March			January-March, Inclusive		
	1970	1969	5-Year Median 1966-1970	1970	1969	5-Year Median 1966-1970
Amebiasis	—	—	—	4	—	3
Aseptic meningitis	1	1	—	2	2	—
Brucellosis	—	1	—	—	1	—
Diphtheria	—	—	—	—	—	—
Encephalitis, prim., infect.	2	1	1	2	2	1
Encephalitis, post-infect.	—	—	—	—	—	—
Gonorrhea	547	387	369	1,536	1,136	984
Hepatitis, infectious	58	35	21	130	91	70
Measles (Rubeola)	1	—	*	40	—	*
Meningococcal meningitis	—	2	—	—	11	4
Mumps	28	10	*	48	48	*
Pertussis	—	—	—	—	—	—
Poliomyelitis	—	—	—	—	—	—
Rheumatic fever	1	2	—	1	2	1
Rubella (German Measles)	6	8	*	14	22	*
Salmonellosis	20	4	14	35	34	36
Scarlet fever	5	6	6	59	21	44
Shigellosis	6	4	4	15	17	15
Streptococcal infections	366	702	392	658	1,208	1,013
Syphilis	140	145	104	350	465	267
Tinea capitis	1	5	4	10	11	13
Tuberculosis	22	18	23	51	44	54
Tularemia	—	—	—	—	—	—
Typhoid fever	—	—	—	—	—	—

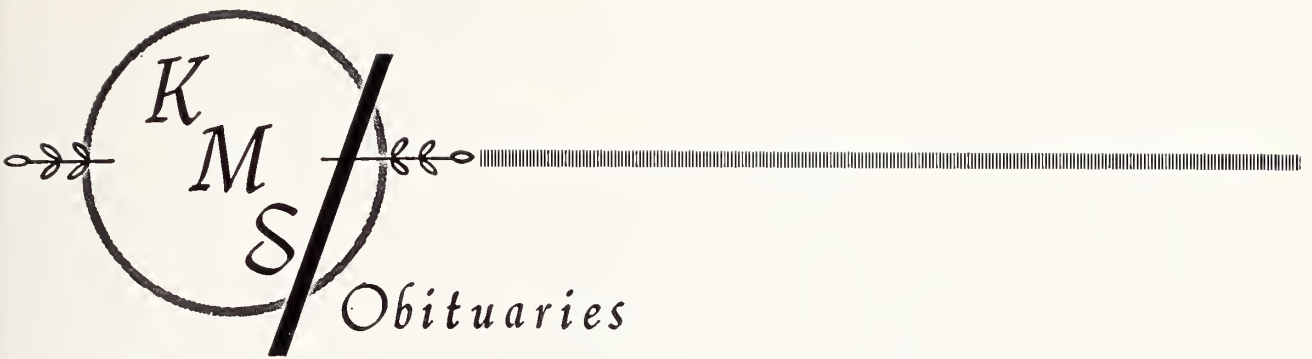
ANTIBIOTICS PROLONG SALMONELLAE EXCRETION IN ACUTE SALMONELLOSIS

Use of antibiotics in acute *Salmonella* gastroenteritis "prolongs the duration of fecal excretion of salmonellae, thus increasing the potential for person-to-person spread of infection. Drugs also favor the development of antibiotic-resistant strains, making those infections potentially more dangerous," report Aserkoff and Bennett. Of 185 patients treated with antibiotics (97 with chloramphenicol, 48 with ampicillin and 40 with other antimicrobials including tetracycline, sulfonamides, penicillin and neomycin), 65.4 per cent were still positive for *S. typhimurium* 12 days after exposure and 27 per cent were positive at 31 days. In contrast, of 87 patients with the same infection who were not treated, only 42.5 per cent and 11.5 per cent were positive at 12 and 31 days, respectively. The patients studied were among an estimated 1,900 persons who acquired febrile gastro-

enteritis due to the consumption of turkey sandwiches contaminated by a strain of *S. typhimurium* found sensitive to multiple antibiotics.

"Of 400 strains of salmonella isolated from clinical sources throughout the United States in 1967, 22 per cent were resistant to one or more antibiotics," according to the investigators. "The dissemination of antibiotic-resistant salmonella represents a potentially serious medical problem. Systemic salmonella infections for which antibiotics are indicated (meningitis, endocarditis, osteomyelitis and so forth) are difficult to treat in the face of antibiotic resistance. More potent and potentially more toxic antibiotics are required."

On the basis of their studies and those of other investigators, the authors do not recommend antibiotic therapy in uncomplicated *Salmonella* gastroenteritis.—Aserkoff, B., and Bennett, J. V.: *New Eng. J. Med.* 281:636, 1969.



LOUIS G. GRAVES, M.D.

Dr. Louis G. Graves, 62, died at his home in St. John on April 17, 1970.

Dr. Graves was born in Atwood, Kansas, on December 4, 1908. He was graduated from Baylor Medical School in Dallas, Texas, in 1937 and began his practice of medicine in St. John in 1938. Except for time spent in military service, he continued his practice there.

Surviving Dr. Graves are his wife and two sons.

PAUL M. POWELL, M.D.

Dr. Paul M. Powell, Topeka, died May 7, 1970, at a Houston, Texas, hospital. He was 72 years old.

He was born January 15, 1898, at Sedan, Kansas. He attended Baker University, Baldwin, the University of Kansas School of Medicine and Northwestern University, Chicago, where he graduated in 1921. He moved to Topeka in 1922. In 1927, he went to Tulane University where he studied surgery and in 1937 went to Vienna, Austria, where he did further work in surgery. He was a member of a number of fraternal and medical organizations.

Survivors include his wife and two sons.

The Kansas Medical Society—1970-1971

OFFICERS

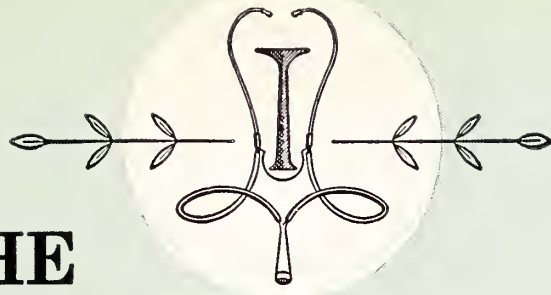
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Second Vice President	Thomas F. Taylor, Salina
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A.M.A. Alternate	George E. Burkct, Jr., Kingman
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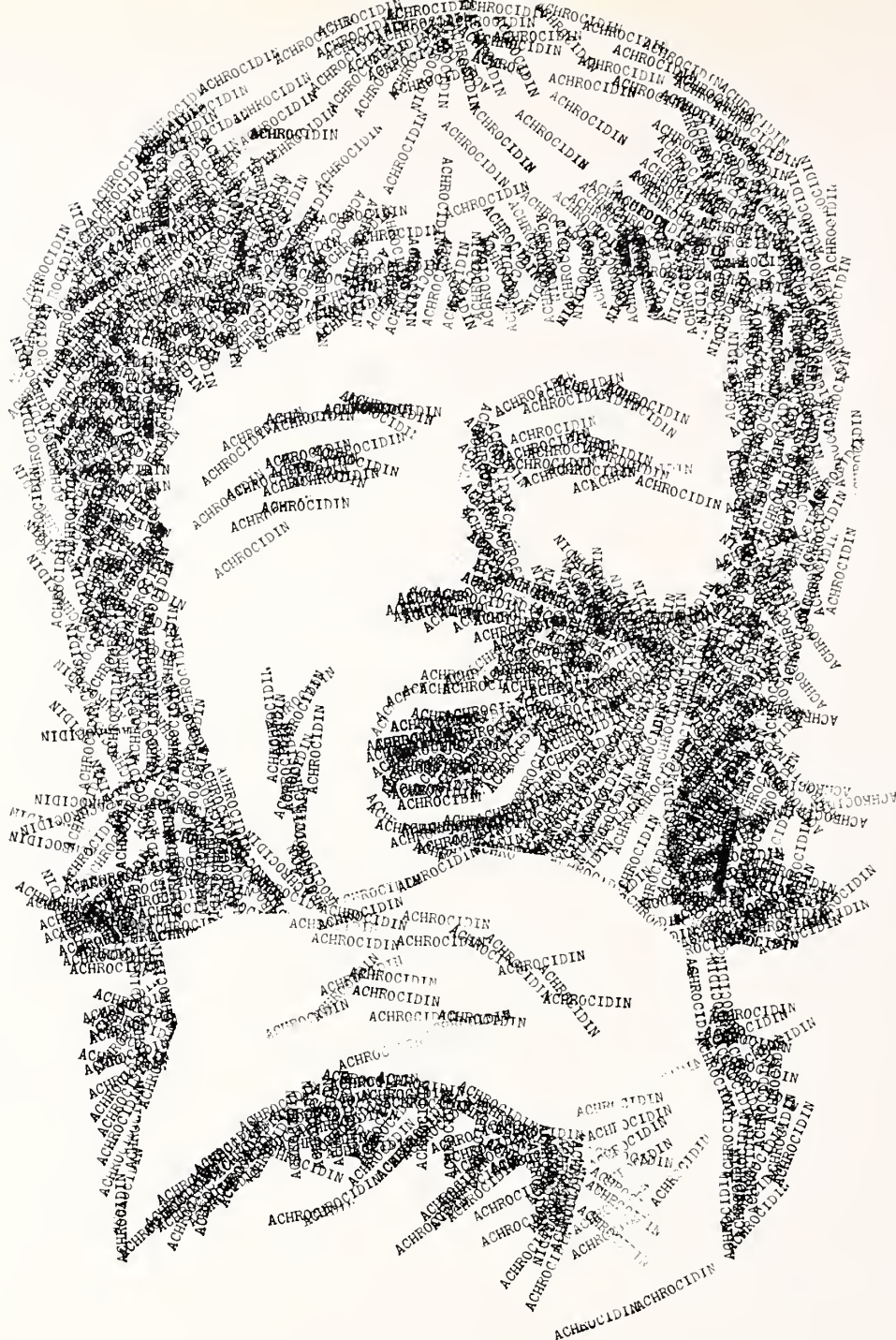
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Medullary Tractotomy

A Surgical Procedure Providing Relief From Severe Pain Due to Cancer of Head and Neck

EDWIN E. MacGEE, M.D.,* *Kansas City, Kansas*

DURING THE PAST TWO YEARS at the University of Kansas Medical Center and the Kansas City Veterans Administration Hospital, 11 patients have had medullary tractotomies for intractable pain secondary to cancer of the head and neck. This paper reviews these cases and emphasizes the value of tractotomy in relieving seriously ill patients of severe pain, thereby eliminating the need for narcotics and allowing their last months of life to be more bearable.

Technique and Case Reports

The operation is done with the patient in the sitting position using general endotracheal anesthesia. Elastic stockings, an esophageal stethoscope, EKG monitor, and CVP catheter (to aspirate air in case of air embolus) are used. A midline skin incision is made in the high cervical region. The cervical paraspinal muscles are dissected off the occiput and the arch of C-1 to the top of the C-2 lamina on the side of the patient's pain. A minimal suboccipital craniectomy and hemilaminectomy of C-1 are done. The dura is opened and the cisterna magna drained

Medullary tractotomy, an incision in the descending trigeminal tract near the obex of the medulla, can provide relief of severe intractable pain in patients with cancer of the head and neck. Thus the need for narcotics is eliminated and their last months of life are more bearable. The operation is discussed, including its neuroanatomical basis, complications, and results. A review of the literature and the present series shows that 83 per cent of patients have satisfactory pain relief, however, there is a 25 per cent mortality rate.

of CSF. The ipsilateral cerebellar hemisphere is gently retracted and important structures identified, including the obex, clava, tuberculum cuneatum, trigeminal eminence, and the exiting rootlets of the accessory (XI) nerve. The descending trigeminal tract lies immediately beneath the trigeminal eminence. With an upcutting cordotomy knife, an incision is made 2 to 4 millimeters below the obex and 4 millimeters deep in the trigeminal eminence using the rootlets of XI as the anterior boundary (*Figure 1*).

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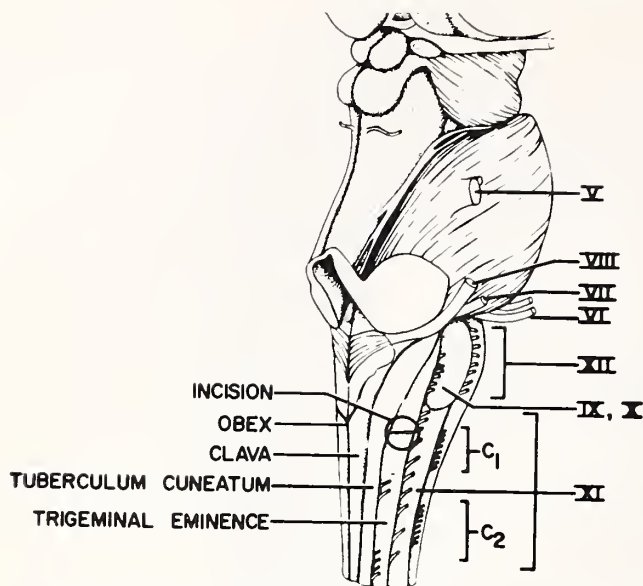


Figure 1 (a). Brain stem viewed from right side showing incision in the trigeminal eminence.

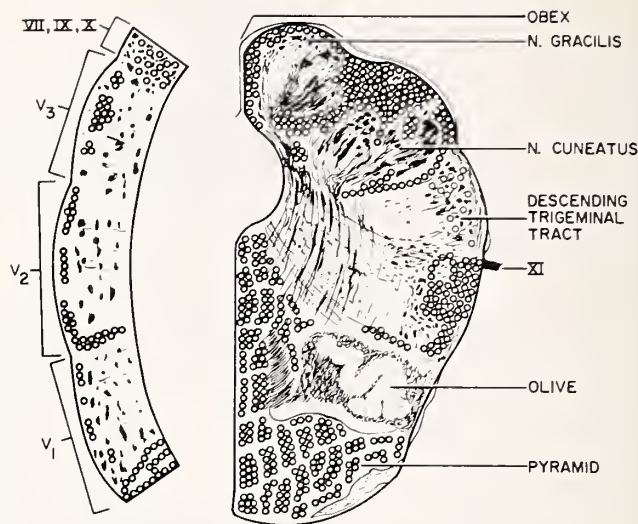


Figure 1 (b). Cross section of the medulla 2 to 4 millimeters below the obex showing the descending trigeminal tract.

The knife is brought posteriorly where it exits thru the lateral edge of the fasciculus cuneatus. The incision is made in an avascular area and usually there is no bleeding. A dorsal rhizotomy of C1-C2 is done. The dura is closed in a water-tight manner and the wound closed in anatomical layers.

The pertinent data are presented in *Table 1*. It can be seen that:

1. There are ten males and one female.
2. All patients presented with severe intractable pain secondary to cancer of the head and neck. Ten patients had the initial diagnosis of cancer made within two years of their tractotomy. Six patients had carcinoma of the tongue.
3. All patients were taking narcotics for pain at the time of tractotomy.
4. Three patients had respiratory distress. Two required tracheostomy and one required assisted ventilation for 24 hours postoperatively.
5. There were three deaths attributable to surgery. A 75-year-old man with severe cardiopulmonary disease died six days after surgery without regaining consciousness. A 58-year-old man died one week postoperatively. He had a postoperative subdural hematoma from venous bleeding associated with peripheral rhizotomy of IX, a procedure not usually done with tractotomy. A 48-year-old man died of aspiration pneumonia two weeks postoperatively. He may have aspirated because of an absent gag reflex. This was the only other patient in this series to have peripheral rhizotomy of IX. These latter two patients also had a dorsal rhizotomy of C3-C4.
6. All patients were initially relieved of their pain.

7. All patients, except two recently operated upon, died of their disease within five months following surgery. Most of the patients required analgesics terminally for pain primarily due to extension of their disease beyond the limits of the trigeminal, facial, glossopharyngeal and vagal nerves.

8. There were no cases of wound infection or air embolus.

Discussion

Medullary tractotomy is an excellent example of the clinical application of basic neuroanatomy. The peripheral innervation, as well as the central representation in the brain stem, will be discussed in detail.

Pain sensation from the face is subserved primarily by the trigeminal nerve (V). These are general somatic afferent fibers. The ophthalmic division (V₁) supplies sensation to the forehead, central part of the anterior two thirds of the scalp, lacrimal gland, conjunctiva, cutaneous area at the margin of the orbit, eyeball, skin on the dorsum of the nose, ethmoidal air cells, sphenoid sinus, frontal sinus, and anterior part of the nasal cavity. The maxillary division (V₂) supplies the lateral nasal, superior labial, and infraorbital areas of the face, nasopharynx, sphenoid sinus, ethmoidal air cells, maxillary sinus, hard palate, upper teeth and gums, and the cutaneous area of the anterior zygomatic and temporal regions. The mandibular division (V₃) supplies the lining of the mastoid air cells, skin and mucous membrane of the cheek, anterior two thirds of the tongue, sublingual mucosa, lower teeth and gums,

TABLE 1

<i>Case</i>	<i>Age</i>	<i>Sex</i>	<i>Clinical Status (on Admission)</i>	<i>Complication</i>	<i>Clinical Status (Most Recent Evaluation)</i>
1	60	M	2 years PTA had right hemimandiblectomy for squamous cell carcinoma of the gingival mucosa. Intractable pain deep in right ear, face and jaw, requiring Demerol 35 mg. and Phenergan 50 mg. q 3 h.	None	Initially well relieved of pain and used only Darvon at the time of discharge. 3 mos. p.o. he developed a painful mass in the palate that was diagnosed as squamous cell carcinoma. This was felt to be new and not a recurrence of his old cancer. He used Talwin 30 mg. q 4 h terminally. Died 5 mos. p.o.
2	46	M	2 years PTA had left radical neck dissection and Cobalt therapy for squamous cell carcinoma of the tongue. There was tumor in the left tongue, floor of the mouth, and retro-mandibular area. Intractable pain of left face with dysphagia requiring Demerol 100 mg. q 3 h. An elective pre-operative tracheostomy was done.	None	Initially well relieved of pain. He used Demerol 100 mg. q 4 h terminally. Died 2 mos. p.o.
3	59	M	6 mos. PTA had radium therapy for inoperable squamous cell carcinoma of the tongue. 25-lb. weight loss in last 5 mos. Large sub-mandibular mass with intractable pain deep in right ear, face and jaw, requiring Darvon compound, Demerol 50 mg. q 3 h, and Dilantin 300 mg. daily.	Respiratory distress with dyspnea and cyanosis several hours p.o. Corrected by tracheostomy.	Initially well relieved of pain, but did take Codeine 45 mg. t.i.d. p.o. Terminally he used Morphine for diffuse bilateral sublingual pain. Died 1 mo. p.o.
4	56	F	2 years PTA had Cobalt therapy for inoperable squamous cell carcinoma of the left maxillary sinus. 60-lb. weight loss in last 12 mos. Large fungating mass that had eroded and destroyed her left maxilla, eye and orbit. Intractable pain deep in left ear, pharynx and entire left face requiring Morphine 10 mg. q 2 h, Phenergan 25 mg. q.i.d. and Codeine 30 mg. q 3 h.	None	Initially well relieved of pain and used only Darvon and an occasional Codeine. Died 1 mo. p.o.

5	75	M	1 year PTA had Cobalt therapy for inoperable squamous cell carcinoma of the tongue. Tumor mass involved right lower jaw, tongue and upper neck. Intractable pain deep in right ear, tongue, lower jaw and submandibular region requiring Dilaudid 4 mg. q 4 h. He had one-week pulmonary clean-out because of severe emphysema, immediately preceding tracheotomy.	Never awoke from surgery. Decerebrate. Automatic respirator used. Sputum cultured <i>Pseudomonas</i> which was treated with Kantrex. Died 6 days p.o. Autopsy showed cerebral edema (brain weighed 1600 grams). Also was found to have squamous cell carcinoma of the lung.	
6	64	M	3 mos. PTA had Cobalt therapy for inoperable squamous cell carcinoma of the tongue. An elective pre-operative tracheostomy was done. Intractable pain deep in right ear, tongue and jaw requiring Demerol 50 mg. q 4 h.	None	Initially well relieved of pain. He used Talwin 30 mg. q 4 h terminally for sublingual pain. The floor of his mouth was necrotic. His tongue was destroyed by tumor. Died 7 mos. p.o.
7	47	M	6 mos. PTA had nose excised and right radical neck dissection for squamous cell carcinoma of the nose. Cobalt therapy discontinued because of side-effects. Intractable pain of right lower gum and submandibular region requiring Empirin #4 q 4 h.	Unable to intubate at time of surgery. Had to have emergency tracheostomy. Developed tracheobronchitis, which was treated with Keflin and Colymycin, however, sputum cultures were negative.	Well relieved of pain. Died 2 mos. p.o.
8	33	M	4 mos. PTA had radium therapy and right radical neck dissection for squamous cell carcinoma of the tongue. Necrotic mass in lateral posterior region of tongue. Intractable pain deep in right ear, tongue, cheek, jaw and pharynx requiring Codeine 180 mg. q 1 h.	Spontaneous but shallow and inadequate respirations immediately p.o. Assisted ventilation required for 24 hours p.o. No sequelae.	Well relieved of pain 3 mos. p.o. He is developing left tongue, gum, and jaw pain secondary to tumor invasion.
9	48	M	5 years PTA had a commando procedure for squamous cell carcinoma of the tongue. 15-lb. weight loss in recent months. At the time of tracheotomy there was no definite evidence of tumor recurrence. He had dysesthesias in the jaw and high cervical region. He was depressed, had dysphagia, and refused to shave because of the dysesthesias and intractable pain requiring Talwin.	None	Well relieved of pain 2 mos. p.o.

- 10 58 M 8 mos. PTA had inoperable squamous cell carcinoma of the left tonsil treated with Cobalt. Had dysphagia and a firm fullness in the left tonsil and jaw.
Intractable pain in left tonsil and jaw requiring Empirin #3, Talwin and Demerol.
- 11 48 M 8 mos. PTA had inoperable squamous cell carcinoma of the right tonsil treated with Cobalt. Intractable pain in right tonsil and jaw requiring Empirin #3 and Demerol 100 mg. q 4 h.
- Initially awake and completely relieved of pain but 12 hrs. p.o. he deteriorated with increasing lethargy and quadriparesis. At reoperation a 25-cc subdural hematoma was evacuated. In addition to tractotomy, peripheral section of IX was done. It was felt the hematoma was secondary to venous bleeding associated with the sectioning of IX. He required assisted ventilation and was unresponsive p.o. Died 1 week p.o. Autopsy showed brain stem infarction.
- Completely relieved of pain. Four days p.o. he had fever of 104° and pneumonia. Tracheal aspirate cultured proteus. Despite intensive therapy including Penicillin and Keflin, he died 2 weeks p.o. In addition to tractotomy, peripheral section of IX was done. It was felt he may have aspirated because of an absent gag reflex on the right.
- Autopsy showed bilateral lower lobe pneumonia with microabscess formation and cerebral edema. (Brain weighed 1610 grams.)

skin in the mandibular area, posterior facial and temporal regions, parotid gland, temporomandibular articulation, tragus and most of the helix as well as the anterior part of the tympanic membrane.

The facial nerve (VII) supplies a portion of the lateral and a less extensive zone on the medial surface of the ear, as well as part of the external auditory canal and tympanic membrane.

The glossopharyngeal nerve (IX) supplies the posterior one third of the tongue, tonsillar pillars and the tonsils, and the oropharynx from the level of the eustachian tube to the epiglottis.

The vagus nerve (X) supplies a small area of skin on the posterior surface of the ear, external auditory meatus, tympanic membrane, base of the tongue, epiglottis, and the supraglottic portion of the larynx.

The upper posterior cervical nerve roots subserve the posterior one third of the scalp, angle of the jaw, and the neck.⁴

The cell bodies of the cutaneous sensory neurons of V are located in the Gasserian ganglion, and their axons form its large sensory root. The smallest fibers with little or no medullation enter the descending trigeminal tract, pass caudalward and terminate only in the trigeminal complex. These fibers are associated peripherally with free non-encapsulated sensory endings that transmit pain and temperature. One of the nuclei of the trigeminal complex, the spinal trigeminal nucleus, is divided into three parts on the basis of cytoarchitectonic structure.⁹ These are the subnucleus caudalis, subnucleus interpolaris, and subnucleus oralis. Only the subnucleus caudalis has the same fundamental cell arrangement as the head of the posterior horn of the spinal cord and is concerned with the conduction of pain and temperature from the face. The subnucleus caudalis is somewhat variable in length but lies between the obex and C-4. A horizontal lamination exists in that the mandibular division lies dorsomedially and the ophthalmic division lies ventrolaterally with the maxillary fibers between those of the other two divisions. Vertical lamination also occurs; however, there is some disagreement about the exact pattern of this lamination. Kunc feels the pathways of all trigeminal divisions for pain terminate caudal to the obex.⁷ The fibers of the middle parts of the face terminate highest and those from the periphery lowest in the spinal trigeminal nucleus, similar to the classic "onionskin" pattern of Dejerine. The pathways of all three divisions of V terminate in all segments of the subnucleus caudalis but they have a greater concentration in the segment, which in its peripheral projection corresponds most with the innervation area of the respective trigeminal division. White and Sweet feel that pain fibers from mucosal portions of V and the zones of VII, IX and X often have some terminations above a

cross-sectional level 3 millimeters below the obex, but that from this level on down, the cutaneous trigeminal fibers have nearly all their terminations.¹³

Following tractotomy, in addition to analgesia in the trigeminal area of the face and mouth, similar changes occur in other regions. These regions are the antihelix and concha of the ear, posterior one third of the tongue, tonsils and pharynx, all on the side of the operation. These regions are innervated by VII, IX and X. Therefore, these fibers join and accompany the pain fibers of V in the brain stem.^{1, 10} These fibers run between the fasciculus cuneatus and the descending trigeminal tract in a small bundle called the "tractus spinalis facialis, glossopharyngici et vagi communis."⁷

These are two secondary pathways for the transmission of pain stimuli from the face to the dorsal thalamus.¹¹ These are the ventral and dorsal secondary ascending (or sensory) tracts of the trigeminal nerve. The major portion of pain fibers from the subnucleus caudalis are carried in the ventral tract which ascends sharply as it crosses on the way to the posterior ventral thalamic nucleus. From the thalamus, transmission occurs via the corona radiata to the somesthetic cortex.

It should be noted that the restiform body (inferior cerebellar peduncle) covers the descending trigeminal tract above the level of the obex, but 4 to 5 millimeters below the obex the tract is nearly at the surface of the medulla, covered only by external arcuate and dorsal spinocerebellar fibers.

In 1938 Sjöqvist first demonstrated that an incision into the medulla might produce complete trigeminal anesthesia.¹² Since then 916 tractotomies for trigeminal neuralgia with 14 deaths (1.6 per cent mortality) have been reported. By contrast, few reports exist on medullary tractotomy for intractable pain due to malignant disease of the head. Grant and Weinberger reported 11 cases.² Five patients were essentially pain free until death, three patients were incompletely relieved of pain, and one patient had no pain relief. There were two deaths in the immediate postoperative period, both due to pneumonia. Hamby reported 13 cases, with six deaths.³ Three of the deaths occurred within a few days of operation from aspiration pneumonia. Kunc had good results in nine cases.⁷ All his incisions were caudal to the obex. In 1969 White and Sweet reported 19 tractotomies with five fatalities.¹³ Tractotomy was done 5 to 6 millimeters rostral to the obex in three patients; one patient had mild recurrence of pain. Tractotomy was done at the level of the obex in 14 patients, with five deaths. Two patients had mild, and four had severe recurrence of pain. Tractotomy was done 4 to 6 millimeters below the obex in two patients. These authors feel that when dense analgesia is needed, as in treating pain due to malig-

nant disease, the incision should be made rostral to the obex.

It can be seen from the above discussion and the present data that there is relatively higher mortality (16 of 63 patients or 25 per cent) when medullary tractotomy is done for intractable pain due to malignancy. The complications seen most frequently are respiratory and include aspiration pneumonia, airway obstruction due to cancer, and decreased spontaneous respirations possibly secondary to brain stem edema. Potentially, these complications are preventable. Preoperative pulmonary evaluation, function studies, and clean-out should be done. An elective tracheostomy may be considered because intubation is difficult and frequently these patients require tracheostomy later in their illness because of airway obstruction from cancer. Close attention to proper positioning and oxygenation during intubation is especially important. Meticulous operative techniques should be used with minimal gentle retraction and a sharp cut in the brain stem. Cranial nerve rhizotomy is unnecessary. Using steroids for several days postoperatively may reduce brain stem edema. Intensive postoperative pulmonary care is mandatory.

The principal advantages of medullary tractotomy are:

1. Satisfactory relief of pain in a high percentage of patients (50 of 63 patients or 83 per cent) with intractable pain.
2. The pain fibers from VII, IX and X as well as those of V are interrupted.
3. The operation requires relatively little dissection and can be done in a short time.
4. Reduction of numbness and paresthesias. The preservation of tactile sensation eliminates the severe pain of anesthesia dolorosa.
5. Elimination of neuroparalytic keratitis.

The principal disadvantages of medullary tractotomy are:

1. The relatively high mortality (25 per cent) when tractotomy is done for pain due to malignancy. This is associated with potentially severe pulmonary complications, which may be preventable with intensive pre- and postoperative care.
2. Difficulty in cutting all, but not more than the descending trigeminal tract and the adjacent tract carrying pain fibers of VII, IX, and X.
3. Ataxia of the ipsilateral upper extremity. The dorsal part of the incision extends into the nucleus cuneatus externus, the analogue for the upper extremity of Clark's column in the thoracic spinal cord for the lower extremity. The dorsal spinocerebellar tract may also be involved. Olivecrona, with incisions 2 to 8 millimeters above the obex, noted protracted severe ataxia of the ipsilateral upper extremity and persistent unsteady gait with lateropulsion.⁸

4. Contralateral body analgesia if the spinothalamic tract is interrupted.

References

1. Brodal, A.: Central course of afferent fibers for pain in facial glossopharyngeal and vagus nerves. *Arch. Neurol. Psychiat.* 57:292, 1947.
2. Grant, F. C. and Weinberger, L. M.: Experiences with intramedullary tractotomy. *Arch. Surg.* 42:681, 1941.
3. Hamby, W. E., Shinnars, B. M., and Marsh, I. A.: Trigeminal tractotomy. *Arch. Surg.* 57:171, 1948.
4. Hunter, C. R. and Mayfield, F. H.: Role of the upper cervical roots in the production of pain in the head. *Am. J. Surg.* 78:743, 1949.
5. Irsigler, F. J.: Sjöqvist's tractotomy. *Neurochirurgia* 6:136, 1963.
6. Kahn, E. A., Crosby, E. C., Schneider, R. C. and Taren, J. A.: *Correlative Neurosurgery*. 693 pp., 1969. Springfield, Illinois, Charles C Thomas.
7. Kunc, Z.: Significance of fresh anatomic data on spinal trigeminal tract for possibility of selective tractotomies. p. 351, 1966. Henry Ford Hospital—*International Pain Symposium*. Boston, Massachusetts, Little, Brown & Co.
8. Olivecrona, H.: Tractotomy for relief of trigeminal neuralgia. *Arch. Neurol. Psychiat.* 47:544, 1942.
9. Olszewski, J.: On the anatomical and functional organization of the spinal trigeminal nucleus. *J. Comp. Physiol.* 92:401, 1950.
10. Taren, J. A.: The positions of the cutaneous components of the facial glossopharyngeal and vagal nerves in the spinal tract of V. *J. Comp. Neurol.* 122:389, 1964.
11. Taren, J. A. and Kahn, E. A.: Anatomic pathways related to pain in face and neck. *J. Neurosurg.* 19:116, 1962.
12. Sjöqvist, O.: Studies on pain conduction in the trigeminal nerve. A contribution to the surgical treatment of facial pain *Acta Psychiat. et Neurol.* 1938, suppl. 17, 139 pp.
13. White, J. C. and Sweet, W. H.: Pain and the neurosurgeon. 1,000 pp., 1969. Springfield, Illinois, Charles C Thomas.

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Routine Proctosigmoidoscopy

—Its Value as a Screening Procedure

DILLIS L. HART, M.D. and FRED W. ROBINSON, M.D., *Wichita**

CANCER OF THE COLON is recognized by many physicians as the most common cancer in man today. It is second only to pulmonary malignancies as a killer of man. For more than a century colon malignancies have been shown to occur predominantly in the proximal and distal segments of the large intestine. Seventy to 80 per cent of all large intestine malignancies are observed in the distal 25 centimeters. Conclusions are controversial as to the value of certain diagnostic techniques and screening tests, the differentiation among benign, precancerous or cancerous disease, and treatment of the various lesions.

We are presenting our experience with routine proctosigmoidoscopies at the Wichita Veterans Administration Center Hospital. Our findings in 2,454 patients examined from July 1, 1961 to June 30, 1968, are presented. The examinations are performed by the full-time staff or surgical residents. Effort is made to examine all patients admitted to the surgical service unless they recently had a negative examination. The patients who presented with severe disease unrelated to the lower gastrointestinal tract, patients too ill to undergo examination, terminal patients and short-stay patients, have not been included in the routine examinations. There were no complications resulting from these examinations, although most were performed by first and second year residents. Premedications or anesthesia were not given, but cleaning enemas were used as indicated.

Some form of disease was observed in 895 patients out of the total of 2,454. The patients with pathological findings were divided into two groups. Group I includes 496 patients who had symptoms referred to the distal colon, rectum and anus. Group II included 399 patients who had no signs or symptoms referred to the lower gastrointestinal tract (*Table 1*).

Polyps and villous adenomas are described by the pathologist as benign, "with atypia," and with carcinoma in situ. By combining these figures certain observations can be made. Benign polyps were observed in 161 patients (6.56 per cent); 93 patients with polyps (3.79 per cent) were asymptomatic; 68 patients (2.77 per cent) were symptomatic. There were three patients who had polyps with atypia

It is our opinion that proctosigmoidoscopic examination is the best screening procedure available. Results should improve if it is used routinely.

(0.12 per cent). Five patients were observed to have villous adenomas; two had carcinoma in situ. Carcinomas were found in 37 patients (1.10 per cent). Twenty-nine of these were symptomatic (0.77 per

TABLE 1
ABNORMAL SIGMOIDOSCOPY FINDINGS

	Asymptomatic	Symptomatic	Total
Hemorrhoids	218	284	502
Benign polyps	93	68	161
External hemorrhoid tags ..	44	0	44
Carcinoma	8	29	37
Cryptitis	4	28	32
Fistula-in-ano	6	15	21
Diverticulosis (or diverticulitis)	5	16	21
Anal fissure	4	11	15
Rectal stenosis	0	14	14
Melanosis coli	8	4	12
Chronic inflammation	0	6	6
Polyps with atypia	2	3	5
Lymphoma infiltration ...	2	2	4
Condyloma acuminata	0	3	3
Pseudo polyps	3	0	3
Villus adenoma	0	3	3
Villus adenoma with ca in situ	0	2	2
Pruritus ani	0	2	2
Ulcerative colitis	0	2	2
Prolapsed anal mucosa	0	1	1
Rectal shelf	0	1	1
Granulation of anastomotic line	1	0	1
Carcinoma of prostate	0	1	1
Regional ileitis	0	1	1
Neurofibrosarcoma	1	0	1
Totals	399	496	895

* From the Veterans Administration Center Hospital, Wichita, Kansas.
Presented at the annual meeting of the Kansas Chapter, American College of Surgeons, Wichita, October 27, 1968.

TABLE 2
NEOPLASMS DETECTED BY ROUTINE PROCTOSIGMOIDOSCOPIC
EXAMINATION OF 2,454 PATIENTS

	<i>Symptomatic (Group I)</i>		<i>Asymptomatic (Group II)</i>		<i>Total</i>	
	NUMBER PATIENTS	PER CENT	NUMBER PATIENTS	PER CENT	Number Patients	Total Per Cent
Benign polyps	68	2.77	93	3.79	161	6.56
Polyps with atypia	3	0.12	2	0.08	5	0.20
Carcinoma	29	0.77	8	0.33	37	1.10
Villus adenomas	3	0.12	0	—	3	0.12
Villus adenomas with ca in situ	2	0.08	0	—	2	0.08
Totals	105	3.86	103	4.20	208	8.06

cent) and eight were asymptomatic (0.33 per cent). There were four patients with infiltrative lymphomas (two symptomatic and two asymptomatic). One patient had a neurofibrosarcoma and he was asymptomatic. There were 12 patients in this study who had a definite diagnosis of cancer (0.5 per cent). This means that five patients out of each thousand were harboring a cancer which otherwise might not have been found had they not undergone a routine proctosigmoidoscopic examination. Each of the asymptomatic carcinomas was less than 1.5 centimeters in diameter and was not detected on digital examination.

One hundred five patients were found to have symptomatic neoplasms (3.86 per cent). One hundred three patients had asymptomatic neoplasms (4.20 per cent). Thus, 208 out of 2,454 patients examined had benign polyps, polyps with atypia and other forms of neoplasia, an overall incidence of 8.06 per cent (*Table 2*).

For the sake of interest we combined the statistics reported by a number of authors to obtain a large experience sample. We realize that results of studies made under different conditions are not truly comparable, but these have certain common ground in that they all listed carcinomas and benign polyps found in their series.

In *Table 3* our results are compared to the results in 169,150 combined patient examinations reported in the different studies in the literature. In the same combined series, 13,193 benign polyps (7.80 per cent) and 1,337 carcinomas (0.79 per cent) were reported. The overall incidence of neoplasms was 8.59 per cent which is comparable to 8.06 per cent in our series (*Table 3*).

Discussion

The mortality and morbidity from lower bowel surgery have decreased significantly during the past

two decades. This improvement is secondary to the advancements in anesthesia, better patient preoperative and postoperative evaluation and care, availability of blood components, and improved surgical techniques. If the five-year survival rate from colorectal carcinomas is to improve, the tumors must be identified earlier. There is almost a 30 per cent drop in the five-year survival from a Stage I to a Stage II colorectal carcinoma.

No effective method of screening patients for colonic carcinoma has been developed. Colonic irrigations for cytology and test for occult blood, guaiac test, have shown some promise. The value of proctosigmoidoscopy is demonstrated in this study by an overall incidence of 4.29 per cent in the detection of unsuspected colonic neoplasms. More important is the fact that 0.5 per cent were malignancies. The amount of professional time required for the proctosigmoidoscopies is less than ideal. However, the equipment and personnel required are not so expensive or sophisticated as to preclude proctosigmoidoscopic examinations in nearly all hospitalized office or even industrial patients.

(Continued on page 278)

TABLE 3
REVIEW OF NEOPLASMS IN 169,150
PROCTOSIGMOIDOSCOPIC EXAMINATIONS
REVIEWED IN THE LITERATURE

	<i>Number of Patients</i>	<i>Per Cent of Total</i>
Benign polyps	13,193	7.80
Carcinoma	1,337	0.79
Totals	14,530	8.59

Clinical Cardiology

Use of Anti-Arrhythmic Agents Other Than Digitalis

LEONARD S. DREIFUS, M.D.,* *Philadelphia*

Quinidine

THE CURRENT THERAPEUTIC STATUS of quinidine has changed little since Wenckebach's classic observations on recurrent atrial fibrillation. Although many antiarrhythmic agents have appeared on the pharmacologic horizon, none has surpassed the efficacy of quinidine, an agent effective in any active arrhythmia, whether atrial, A-V nodal or ventricular. The introduction of precordial electroshock therapy by Zoll and his associates and Lown has imparted a new dimension in the approach to antiarrhythmic therapy and made it possible to convert almost 90 per cent of the patients with atrial fibrillation to sinus rhythm. Nevertheless, the usefulness of quinidine has not diminished because a pharmacologic program must be instituted to maintain a sinus rhythm even after electroconversion.

The usual drug method of converting atrial fibrillation to sinus rhythm in the digitalized patient is to administer quinidine in a dosage of 0.2 grams every two hours for five doses the first day; 0.3 grams every two hours for five doses the second day; 0.4 grams every two hours for five doses the third day; and so forth. If conversion fails at 0.6 grams (total daily dose of 3.0), the likelihood of conversion is small and the maintenance of sinus rhythm is probably not feasible. Higher doses are attended with toxicity, quinidine syncope, and cardiac standstill. Although quinidine may be useful in converting atrial flutter, the drug should not be used to convert atrial flutter with 2:1 A-V conduction ratio without prior digitalization, since the vagolytic effects of quinidine may allow 1:1 A-V conduction to occur with a dangerously rapid ventricular rate. Quinidine may be administered in a dose of 0.2 to 0.4 grams three to four times a day to control ventricular or atrial premature systoles. Quinidine may be effective in the treatment of arrhythmias associated with Wolff-Parkinson-White syndrome and occasionally it may abolish the electrocardiographic changes of this syndrome. The combination of a small dose of quinidine 100 to 200 milligrams four times a day with

propranolol 10 to 20 milligrams four times a day has proved extremely effective in controlling Wolff-Parkinson-White tachycardia, recurrent atrial flutter or fibrillation and in the presence of intermittent ventricular tachycardia.

Although it has been traditionally recommended that a test of quinidine be given to elicit idiosyncrasy, many clinicians utilize the first dose of a therapeutic program for this purpose.

Toxicity may be manifested by pulmonary, gastrointestinal, or cardiac signs and symptoms. Cyanosis, respiratory depression, vascular collapse, restlessness, pallor, cold sweat and syncope are not uncommon. Cinchonism may develop with tinnitus, vertigo, visual disturbances, headache, confusion, angioneurotic edema, nausea, vomiting, diarrhea, fever, or cutaneous manifestations. Thrombocytopenia has been observed occasionally and may be associated with a grave prognosis.

A widening of the QRS complex of more than 25 per cent is a warning of impending toxicity and the drug should be discontinued. Cardiotoxicity may be successfully antagonized by 40 to 80 mEq molar sodium bicarbonate or 1 to 3 milligrams per minute of isoproterenol.

Procainamide

More than 40 years ago, it was found that procaine could paralyze extracardiac nerves; but, because of rapid hydrolysis, therapeutic levels were difficult to maintain and it never became a clinically useful antiarrhythmic drug. On the other hand, procainamide which binds para-aminobenzoic acid and diethylaminoethanol through an NH group is not affected by the choline esterase of the body and consequently is effective by the oral and parenteral routes with a more prolonged duration of action.

The hemodynamic effects of procainamide are not unlike quinidine. However, large doses of intravenous procainamide may cause serious hemodynamic derangements.

Although it was originally thought that procainamide depressed contractility of cardiac muscle less than quinidine, more recent studies suggest that equivalent doses expressed as milligrams per kilogram depress cardiac muscle equally.

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Prepared for the JOURNAL by the Kansas Heart Association.

As in the use of quinidine, it is important to realize that patients with renal damage or with congestive heart failure excrete procainamide more slowly than do normal persons, and cumulative effects are a potential danger. Procainamide, like quinidine, acts on the atrium and ventricle by increasing the refractory period and conduction time and has anticholinergic effects on the atria and A-V node. The electrophysiologic effects of the drug are similar to those of quinidine. However, these similarities do not adequately explain the successful use of one drug when the other has failed as an antiarrhythmic agent.

Although procainamide is probably less successful than quinidine in reverting atrial fibrillation to sinus rhythm, it has been used in quinidine-sensitive patients. Likewise, it has been effective in restoring sinus rhythm in patients with atrial flutter and atrial tachycardia. Procainamide appears to have a distinct advantage over quinidine in the management of ventricular tachycardia, when urgent intravenous therapy is required. The rate of intravenous administration should not exceed 100 milligrams per minute, and electrocardiographic monitoring is imperative during the period of injection. We have frequently and successfully treated atrial tachycardia with block and ventricular tachycardia, with procainamide in the presence of digitalis overdosage. However, the management of ventricular or junctional tachycardia in high grade A-V block requires special attention. Depressant agents, such as quinidine, procainamide and potassium salts may abolish all subsidiary pacemakers and engender cardiac standstill. Hence, electrical pacing or isoproterenol are best utilized in this clinical setting.

The toxic signs of procainamide include hypersensitivity reactions such as skin eruptions, bone marrow depression, or lupus erythematosus with proteinuria and polyserositis. The development of hypotension or widening of the QRS complex beyond 25 per cent of control is a definite indication to withdraw this agent. As in the use of quinidine, infusion of hypertonic sodium salts will reverse procainamide toxicity.

Lidocaine

The pharmacologic activity and electrophysiologic mechanisms of lidocaine are similar to quinidine and procainamide. It has proved extremely effective in terminating ventricular tachycardia, especially in the presence of an acute myocardial infarction and premature ventricular systoles.

The main hallmark of this agent is its superiority to procainamide in certain specific situations when a short-acting agent is required, particularly in hearts previously depressed by other antiarrhythmic agents or where only a transitory antiarrhythmic effect is

indicated. It has been used successfully in depressed hearts following open heart surgery to control ventricular tachycardia prior to the termination of extracorporeal circulation. However, it is impractical for the very long term treatment or prevention of paroxysmal ventricular tachycardia. It is safe and effective in a single intravenous dose of 1 milligram per kilogram with repeated doses every 20 minutes to a maximum of 750 milligrams. Usually a bolus injection of 50 to 100 milligrams is administered intravenously followed by an intravenous drip of 2 to 4 milligrams per minute to prevent the reappearance of ventricular premature systoles. This agent has significantly reduced the mortality associated with ventricular tachycardia and fibrillation in the presence of an acute myocardial infarction and has become the most useful antiarrhythmic agent in the coronary care unit. Similar restrictions as stated under quinidine and procaine should be observed in the presence of high grade A-V block.

Diphenylhydantoin

Diphenylhydantoin (Dilantin®) appears equally effective in both supraventricular and ventricular arrhythmias and possesses properties which make it effective against digitalis-induced arrhythmias. It has been successful in preventing paroxysmal atrial tachycardia (PAT) when the usually employed antiarrhythmic agents have failed. It has proved effective in suppressing atrial, A-V nodal, and ventricular premature systoles, and is particularly effective in terminating digitalis-induced arrhythmias. Its transient action and rapid reversibility of toxic effects may give it certain advantages over other depressant agents. However, it does not appear effective in converting atrial fibrillation to sinus rhythm. In the treatment of rapid supraventricular or ventricular tachycardias, 5 to 10 milligrams per kilogram can be slowly injected intravenously over a 15 minute period and repeated within two to three hours. The drug can be administered orally, from 100 to 200 milligrams four times daily, for the suppression of ectopic beats or prophylaxis against recurrent paroxysmal tachycardia.

Toxic manifestations of diphenylhydantoin are seen in approximately 10 to 15 per cent of patients and include nervousness, ataxia, tremors, nystagmus, visual disturbances, respiratory arrest, confusion or drowsiness, gastric distress, erythematous or morbilliform cutaneous eruptions and hyperplasia of the gums.

Beta Adrenergic Blocking Agents

Interest in blocking the effects of adrenergic nerve stimuli is attributed to Dale who, in 1906, described the reversal of the pressor response to epinephrine

by pretreating experimental animals with certain ergot compounds. Alhquist recognized two types of adrenergic receptors and designated these alpha and beta.

Propranolol reduces the heart rate and cardiac contractile force. Arterial pressure and ascending aortic flow are slightly reduced in anesthetized dogs. As these changes do not occur after depletion of norepinephrine stores by syrosingopine, it is concluded that they result from blockade of resting sympathetic drive. In humans, administration of propranolol will cause a decrease in cardiac output and left ventricular work at rest and during exercise. Propranolol will abolish the vasodilation effects of epinephrine and isoproterenol but not the vasoconstrictor effects of the catecholamines on the peripheral vessels.

With intravenous administration, propranolol exerts a rapid antiarrhythmic action. Propranolol is usually given slowly in doses of 1 to 5 milligrams intravenously (no more than 1 milligram every two to three minutes) or 15 to 30 milligrams three to four times daily may be given by the oral route prophylactically to prevent the return of ectopic beating. The action is usually immediate during the intravenous administration and the drug may be repeated within two to three hours.

The side effects of propranolol may include light-headedness, drowsiness, nausea, diarrhea, sleeplessness, rashes, visual disturbances, purpura, paresthesias, flushing, and mental confusion. The pharmacologic effects of propranolol have produced hypotension, bradycardia, cardiac failure, A-V heart block, bronchial wheezing and aggravation of mild obstructive pulmonary disease.

Routine Proctosigmoidoscopy

(Continued from page 275)

There should be definite improvement in early diagnosis of colonic neoplasms, if this is combined with stool guaiac. The barium enema is still the most valuable diagnostic tool in lesions proximal to the distal 25 centimeters of the gastrointestinal tract.

Summary

We observed some form of disease in 895 patients out of 2,454 who underwent routine proctosigmoidoscopy. There were no complications from the procedure.

Neoplasms were observed in 8.06 per cent of the patients; 4.2 per cent of the patients were asymptomatic.

Twelve of the patients (0.5 per cent) had a malignancy which was not detected prior to the routine proctosigmoidoscopy.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 1300 Topeka Avenue, Topeka, Kansas 66612.

HEMORRHAGE AFTER CHILDBIRTH SUBJECT OF NEW TEACHING AID

A major cause of maternal death—postpartum hemorrhage—is the subject of a new film sponsored by the American College of Obstetricians and Gynecologists, and the American Medical Association.

Second in a film series titled *Modern Obstetrics* made under a grant from Ortho Pharmaceutical Corporation, the teaching aid premiered at the recent Sixth World Congress of Gynecology & Obstetrics in New York. It was praised generally by Congress registrants from around the world, who included members of both the A.C.O.G. and the International Federation of Gynaecology and Obstetrics.

Even where adequate obstetric care is generally available, postpartum hemorrhage causes 20 per cent of maternal deaths. Ten per cent of all deliveries involve excessive bleeding which may contribute to postpartum morbidity.

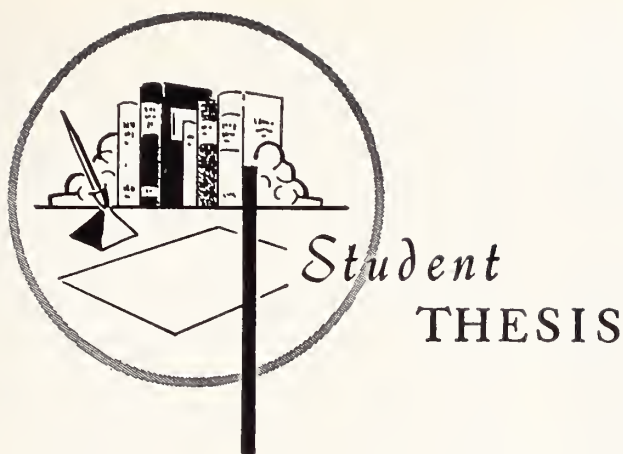
James H. McClure, M.D., F.A.C.O.G., of the University of California Medical School at Irvine—head of the medical committee who developed the film—said:

"This new teaching aid is designed to assist the practicing physician, intern and student, and will also be of interest to members of the nursing profession. It outlines the possible causes of postpartum hemorrhage and serves as a guide for any steps which may be indicated when postpartum hemorrhage occurs."

Photographed at the University of Southern California—Los Angeles County Medical Center, *Modern Obstetrics: Postpartum Hemorrhage* emphasizes the importance of quickly evaluating the problem, diagnosing the cause and taking decisive counter-action.

The new 25-minute film was made by Wexler Film Productions of Los Angeles and has been 1½ years in preparation. Bookings may be requested through Modern Talking Picture Service in New York or representatives of Ortho Pharmaceutical Corporation.

It is second in the *Modern Obstetrics* series of teaching films, the first having been sub-titled *Normal Delivery*.



Current Concepts in Management of Cardiac Arrhythmias Following Acute Myocardial Infarction

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IN THE PAST 20 YEARS a vast amount of information has accumulated in the field of cardiovascular disease. New techniques of diagnosis and management are constantly appearing in the literature, but one startling fact has remained, this being that mortality from coronary artery disease has remained essentially unchanged, about three deaths per 1,000 population each year. Year after year myocardial infarction and its following complications have been responsible for the highest death rate of any single disease. In large studies, the death rate from myocardial infarction 30 years ago ranged from 30-40 per cent and it has remained approximately the same up until the advent of coronary care units. The highest mortality immediately follows the infarction and then recedes almost exponentially, with 65 per cent of deaths occurring in the initial three days and 85 per cent in the first week after the attack. Arrhythmias account for somewhere in the vicinity of 40 per cent of deaths.

The purpose of this paper is to give a general discussion of arrhythmias following acute myocardial infarction. The incidence of the various arrhythmias will be summarized from several large series, the numbers usually in terms of ranges of incidence since the method of obtaining the figures varies somewhat from author to author. Most of the paper

will be devoted to the present concepts in treatment of serious arrhythmias and prevention by careful monitoring and aggressive treatment of predisposing causes such as electrical, biochemical, drug-induced, and pump disorders. The presentation of modes of treatment will be such as to be valuable to the practitioner in dealing with this common problem. Incorporated into the paper will be a discussion of an exciting new area in the management of arrhythmias, the coronary care unit.

Recent developments of new drugs, methods for monitoring heart beat, defibrillating devices, transvenous pacemakers as well as permanent pacemakers have stimulated a new interest in studying arrhythmias. Certain of the arrhythmias are potentially life-threatening and require prompt and precise treatment. Appropriate therapy requires a correct diagnosis, so the physician should be quite familiar with the clinical and electrocardiographic findings of the various disturbances in the heart beat. Frequent tracings should be taken during therapy and every effort should be made to determine whether the patient has been taking any kind of cardiac drug, particularly digitalis. Which drug to use and by which route it should be administered depend not only on the type of arrhythmia but also on such factors as the severity of the clinical situation, ventricular rate, age of the patient, electrolyte values, drugs the patient has been taking, and so forth. The correction of hypotension, hypoxia or electrolyte disturbances may occasionally terminate an arrhythmia, so careful attention needs to be paid to these areas. Congestive heart failure may be treated

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Gribble is currently a fellow in Internal Medicine at the Mayo Graduate School of Medicine, Rochester, Minnesota.

in the usual manner unless it is due to a digitalis-induced arrhythmia. Sedation may be administered, and prompt availability of oxygen, drugs for the arrhythmia, electrical equipment, and intravenous fluids is necessary. Helpful in some situations are central venous pressure measurements, determination of blood gases, pH, cardiac output, and systemic vascular resistance.

The effect of various arrhythmias on coronary blood flow is important and indicates the potential hazards associated with the conditions. It is known that coronary blood flow decreases when the systemic blood pressure falls during rapid atrial or ventricular arrhythmias. Coronary blood flow may decrease as much as 35 per cent during rapid atrial tachycardia and 40 per cent in uncontrolled atrial fibrillation. The heart may have sufficient time to fill when atrial flutter is associated with a slow ventricular rate, thus the coronary blood flow may be normal. With more rapid ventricular rates the coronary blood flow decreases an average of 22 per cent. During ventricular tachycardia the average decrease in blood flow through the coronary arteries is 60 per cent and during ventricular fibrillation the flow is negligible. Irregular rhythms such as atrial prematurities and ventricular prematurities can cause a reduction in coronary blood flow of 5 per cent and 12 per cent respectively, but very frequent ventricular prematurities may decrease the flow as much as 25 per cent. A person with normal coronary arteries is usually not disturbed by the drop in coronary perfusion pressure and flow during transient arrhythmias, but a person with coronary atherosclerosis may develop heart failure or angina. As would be expected, arrhythmias not only have an effect on coronary blood flow but on all other tissues, including vital structures such as the brain and kidneys.

Drugs that are used in the treatment of arrhythmias may be divided into four categories. The first includes drugs that increase myocardial contractility. Digitalis and catecholamines with beta sympathetic activity such as isoproterenol, metaraminol, levarterenol and epinephrine are examples. Digitalis must be used with caution in those with acute myocardial infarction who seem particularly susceptible to digitalis-induced arrhythmias. Digitalis is still used for treatment of congestive heart failure and for correction of certain arrhythmias. Short-acting intravenous preparations such as ouabain and deslanoside are preferred because of the rapid onset of action and because their effects last a short period of time after being discontinued if they provoke an arrhythmia. Inconsistent absorption from intramuscular sites is avoided by using the drugs intravenously. Small increments are desirable and ideally one should mix the drugs with dextrose and water and infuse at a slow

rate over 10-15 minutes. The catecholamines act directly on the myocardium to increase contractility. They are effective in the treatment of hypotension since they increase blood pressure not only by increasing cardiac output but, except for isoproterenol, by increasing peripheral vascular resistance by their alpha sympathetic action. Their usefulness may be limited by the production of arrhythmias. Glucagon has been reported to increase contractility with a lower incidence of provoking arrhythmias. The second category of drugs includes those that decrease ectopic impulse formation. Quinidine, procaine amide, lidocaine, diphenylhydantoin, and propranolol are examples. They may also be very helpful in certain arrhythmias but they all also have some depressant effect on the cardiac function and should be used with caution in congestive heart failure and heart block. The third group of drugs are those that enhance atrioventricular function and isoproterenol is the most commonly used drug for this purpose. When conduction is decreased by an increased vagal tone, atropine is the drug of choice. Adrenal steroids may also enhance atrio-ventricular (A-V) conduction by both their anti-inflammatory effect and also by direct effects. The fourth category includes those drugs that block A-V conduction. In the case of atrial arrhythmias where there is a rapid ventricular response, the ventricular rate may be slowed by drugs that have the property of decreasing or blocking A-V conduction. Digitalis is known to exert this influence both by direct and by vagal effects. If digitalis is not effective, or if the arrhythmia is one that is caused by digitalis intoxication, propranolol may be useful.

The total incidence of arrhythmias following acute myocardial infarction varies from series to series but all show that arrhythmias are distressingly common in this situation. The figures tend to be higher in earlier admissions after the attack, in clinically severe infarctions, and in constantly monitored cases. Meltzer's report of four large series reveals the incidence to vary from 61-75 per cent. Stock's paper gives the incidence as being from 73-95 per cent. Day's study shows that 78 per cent of patients showed some arrhythmia in the first 72 hours following infarction. Meltzer's paper reviewing the four groups of from 100 to 150 patients each will be quoted for giving the incidence of the following individual arrhythmias.

The artery to the sinus node arises from the proximal few centimeters of the right coronary artery in 55 per cent of cases and from the proximal few millimeters of the left circumflex artery in 45 per cent. The left circumflex branch supplies most of the atrial myocardium and part of the septum. Interruption of blood flow to the sinus node may be associated with atrial arrhythmias. An atrial arrhyth-

mia associated with a posterior infarction suggests that the first part of the right coronary artery is occluded whereas an atrial arrhythmia associated with a lateral infarction implies that the first few millimeters of the left circumflex artery is involved.

Atrial arrhythmias following myocardial infarction are often transient in nature. If they persist, ventricular action may be diminished due to the infarction or to the rapid ventricular response. The arrhythmia must be converted to sinus rhythm or the ventricular rate must be reduced by blocking A-V conduction.

Atrial premature contractions originate from an irritable focus in the atrium rather than from the sinus node. They may occur in as many as 30 per cent of patients and may herald the possibility of the development of paroxysmal atrial tachycardia or atrial fibrillation. Premature nodal contractions may also occur in 30 per cent of cases and may warn of impending nodal tachycardia. Atrial premature contractions usually do not require treatment if they occur at a rate of less than four or five per minute. However, if this rate is exceeded, treatment should be instituted to prevent complications. Preferred treatment consists of giving quinidine in a dose of 300 milligrams by mouth or intramuscularly every three to four hours. If this is not effective, digitalization with one of the rapid acting preparations should be undertaken.

Paroxysmal atrial or nodal tachycardias may develop in from 4 to 7 per cent of cases. It is generally attributed to rapid discharges from an irritable focus. Treatment should begin with conservative measures such as mild sedation. Many attacks can be terminated by increasing vagal tone. Carotid sinus pressure should be tried first. The patient should be lying down and an EKG should be monitored constantly. One carotid sinus should be massaged first for 10 to 30 seconds and if this is ineffective, the other should be tried. Both should never be massaged simultaneously. Valsalva maneuvers may be effective if carotid sinus pressure fails. Vasopressors should be used for hypotension in these patients but these drugs may also stimulate carotid sinus and aortic receptors. Neo-Synephrine may be used in a dose of 0.5 to 1.0 milligrams injected intravenously over a period of 3 to 5 minutes. Each additional therapeutic measure should be followed by a repeat trial of carotid sinus massage. Digitalization is the most consistently effective therapy and should be used if the previous simpler methods have failed. Give Cedilanid® 0.4 to 0.8 milligram intravenously over 2 to three minutes followed by another 0.4 milligram 60 minutes later. Equivalent doses of digoxin are as effective. If still resistant, the arrhythmia may be treated with quinidine sulfate 400 milligrams orally every two hours for five doses, checking blood pressure,

pulse, and EKG frequently. A maintenance dose of 200-400 milligrams orally four times daily is effective. Direct-current cardioversion may become the treatment of choice if the patient is tolerating the tachycardia poorly. A discussion of cardioversion will follow later in the paper.

Atrial fibrillation occurs in from 7 to 16 per cent of patients. This arrhythmia gives rise to problems associated with a decreased cardiac reserve. Reversion to sinus rhythm increases the resting cardiac output by 20 to 40 per cent. Atrial fibrillation causes cessation of effective contraction of the atria and sends rapid and irregular impulses to the atrio-ventricular node and the ventricles. Many of the impulses are blocked at the A-V node but many pass through so that ventricular contractions are rapid and completely irregular. The problem of pulmonary and peripheral emboli in a patient with atrial fibrillation should be kept in mind. When atrial fibrillation develops after an acute myocardial infarction the first obligation of the physician is to control the ventricular rate with a digitalis preparation. If the circulation is not compromised and the arrhythmia persists, the patient should be considered for electrical conversion several weeks later. On the other hand, if the atrial fibrillation is associated with circulatory failure, such as shock or pulmonary congestion, earlier cardioversion should be considered even on an emergency basis. Digitalis may be given orally to patients not in distress. Intravenous administration is indicated in those patients with very rapid ventricular rates or who are acutely ill. A ventricular rate of 60 to 80 per minute should be strived for when digitalizing. The atrial fibrillation sometimes converts to sinus rhythm while the patient is maintained on digitalis. Conversion to sinus rhythm by cardioversion is the treatment of choice, but quinidine has been effective in conversion also. The patient should be fully digitalized because quinidine is vagolytic and enhances A-V conduction, as well as having the effect of slowing and regularizing atrial action. Thus, more impulses can pass through the A-V node, resulting in a rapid ventricular rate. Without digitalization, the patient can develop atrial flutter with 1:1 conduction and result in vascular collapse or congestive heart failure. Following cardioversion a maintenance dose of 300 milligrams of quinidine every six hours helps prevent recurrence of atrial fibrillation. Atrial fibrillation with a slow ventricular rate suggests intrinsic disease of the A-V node and thus is a relative contraindication to cardioversion.

Atrial flutter occurs in less than 2 per cent of patients following myocardial infarction. This arrhythmia has a similar mechanism, prognosis and treatment to atrial fibrillation. A rapid-acting digitalis

preparation should be used, this resulting in an increased degree of A-V block and a slowing of the ventricular rate. The rhythm can revert to sinus or to atrial fibrillation. Quinidine can be used to convert the resulting fibrillation to sinus rhythm. The treatment of choice, however, in atrial flutter is electrical cardioversion since the arrhythmia is especially amenable to this type of therapy, success being achieved in 95 per cent of cases. Electrical conversion should not be considered in cases of suspected or actual digitalis intoxication because of the high incidence of provoking other arrhythmias. Atrial flutter is actually rarely elicited by digitalis intoxication.

Sinus bradycardia occurs in 11 to 14 per cent of cases. Some cases of sinus bradycardia probably actually represent a 2:1 S-A block. Sinus bradycardia is commonly secondary to morphine administration. Asystole and heart block are more likely to develop in those with sinus bradycardia. Increased vagal tone secondary to ischemia is often responsible for the arrhythmia and atropine in a dose of 0.6 to 1.0 milligram intravenously should be used if the ventricular rate is below 50 or if hypotension or failure is present. Slow ventricular rates often increase the frequency of ventricular premature beats. The rate may also be increased by the administration of Isuprel®, 2 milligrams in 500 cubic centimeters of 5 per cent dextrose in water run in slowly. If the rate continues to be less than 50 after institution of these measures, pacing by a transvenous electrode may be indicated. A discussion of electrode pacing will appear later in the paper.

Paroxysmal atrial tachycardia with block is often secondary to digitalis intoxication or a decreased potassium level. Discontinue digitalis immediately if toxicity is suspected. Without digitalis intoxication, the treatment consists of slowing the ventricular rate with a rapid-acting digitalis preparation. Direct-current cardioversion may be employed after slowing of the ventricular rate with digitalis. Potassium depletion may be secondary to digitalis, thiazides, vomiting, or diarrhea. Replacement of potassium may correct the rhythm disturbance. Procaine amide in a dose of 500 milligrams every four hours is useful in paroxysmal atrial tachycardia with block.

Sinus tachycardia is seen in anywhere from 10 to 50 per cent of cases. Treatment should be directed to the underlying cause. The arrhythmia is not usually of concern unless the rate is so rapid that cardiac output is impaired. If sinus tachycardia develops later in the course of myocardial infarction, infection, acute phlebitis, pulmonary emboli, extension of the infarct, congestive heart failure, pericardial tamponade, or ventricular rupture should be kept in mind as possible etiologies.

Nodal rhythms consisting of paroxysmal nodal

tachycardia and A-V nodal prematurities occur in 7 to 10 per cent of cases. They are treated the same as paroxysmal atrial tachycardia and atrial premature contractions.

In beginning to deal with arrhythmias of ventricular origin we should mention first the most common of all arrhythmias following acute myocardial infarction, the ventricular premature contraction. Within the first few days following the attack, 50 per cent of patients have ventricular premature contractions. Meltzer, in a study utilizing a separate premature beat detector, found that 70 per cent of patients develop the arrhythmia. The significance of ventricular premature contractions has been minimized in the past, but it is now apparent that they should not be disregarded as they may herald the onset of ventricular tachycardia or ventricular fibrillation. It has been shown that the frequency of the prematurities, not just their presence or absence, should be the prognostic factor. They reflect varying degrees of irritability of the myocardium and when they occur at a rate of six or more per minute or if their frequency gradually increases, the likelihood of ventricular tachycardia or fibrillation is definitely increased. In addition to the frequency criteria just described, multifocal prematurities, bigeminal rhythm or a prematurity that falls on the vulnerable part (T-wave) of the previous, normally conducted beat, are all reasons for institution of treatment. Current treatment of choice is intravenous lidocaine, given in a bolus of 50 to 75 milligrams and repeated every 5 to 10 minutes until the prematurities are abolished, followed by an infusion drip at the lowest possible rate for suppression of the prematurities, usually from 1 to 5 milligrams per minute. Procaine amide may be used alone or in combination with lidocaine at a dose of 500 milligrams every four to six hours orally or intramuscularly. Intravenous procaine amide may cause hypotension, heart block and QRS widening. Lidocaine and procaine amide both have a depressing effect on A-V conduction and should therefore be used with great care in patients with heart block, if at all. Dilantin® has been found to be very effective in reducing ventricular premature contractions, especially when they are induced by digitalis. Dilantin® has less depressant effect on A-V conduction and appears to be the treatment of choice for the situation of ventricular premature contractions and heart block. An intravenous dose of 50 to 100 milligrams of Dilantin® every 5 to 10 minutes may be repeated three or four times. In the rare situation where the previously discussed drugs do not abolish the prematurities, atropine 0.6 to 1.0 milligram intravenously can be used to increase the heart rate even in the presence of a normal rate. Increasing the rate may decrease the frequency of the prematurities.

A temporary transvenous pacemaker may be necessary in cases with heart block.

Ventricular tachycardia may be seen in from 10 to 30 per cent of cases of acute myocardial infarction. The condition is defined as a series of at least six beats in succession. It must be considered as a medical emergency since it may convert to fatal ventricular fibrillation at any time. Supportive care in terms of sedation, oxygen, and vasopressor in case of hypotension should be instituted and direct-current cardioversion is the treatment of choice. Pharmacological conversion can be quite effective in terms of lidocaine in a dose of 50 to 75 milligrams intravenously, or procaine amide 100 milligrams intravenously repeated every few minutes until effective, followed by a maintenance infusion after return to regular rhythm. Ventricular tachycardia, untreated, may follow several possible courses. It may last from ten seconds to one minute and then stop abruptly. It may persist and lead to congestive heart failure and shock. It may progress into ventricular fibrillation or stand still, or it may produce death by its own detrimental effect on cardiac function.

Ventricular fibrillation is the most serious of all arrhythmias and occurs in 10 per cent of cases. The distinction between primary fibrillation, the unexpected event occurring without congestive failure or shock, and secondary fibrillation, the terminal rhythm in deaths from circulatory failure, is extremely important as to prognosis, as secondary fibrillation rarely responds to treatment whereas primary fibrillation is salvagable in a very high percentage of cases, 67 per cent in Day's series. The circulation in ventricular fibrillation completely fails and death of vital organs occurs if treatment is not begun promptly. Permanent damage may be incurred upon the brain after four minutes of fibrillation. The rhythm is often preceded by ventricular tachycardia, premature ventricular contractions of more than six per minute, complete heart block, or another episode of ventricular fibrillation. Treatment of choice is a defibrillating shock on the highest setting of 400 watt-seconds. Ventilation and external cardiac massage are necessary between shocks if ineffective. One ampule of 44 milliequivalent Na HCO_3 should be given intravenously for each three minutes of cardiac arrest. Intravenous or intracardiac adrenalin, 5 cubic centimeters, should be given every three to five minutes with electrical defibrillation being tried after each dose. Calcium gluconate, 10 cubic centimeters of a 10 per cent solution, can be injected IV or IC. Lidocaine may be a useful adjunct to therapy as may be Dilantin® in the case of digitalis-induced ventricular fibrillation. Studies with bretylium tosylate have shown it to be a valuable drug in the treatment of ventricular fibrillation and other ventricular arrhyth-

mias when used in a dose of 5 milligrams per kilogram body weight two or three times a day intravenously. It was of clear value as an adjunct in the treatment of patients who had been resistant to other drugs and to electrical countershock. The drug has been shown to raise the fibrillation threshold threefold, to exert a positive inotropic effect that increases cardiac output, and to increase the sensitivity of the heart to catecholamines.

Stokes-Adams attacks occur in 2 to 5 per cent of patients with acute myocardial infarctions. Ventricular standstill is the ultimate event in 10 per cent who suffer from shock or intractable heart failure. A sharp blow to the precordium followed by resuscitative measures mentioned above will result in the saving of many with primary ventricular asystole which occurs in the absence of pre-existing circulatory failure. A pacemaker should be used in patients who suffer from repeated Stokes-Adams attacks. Ideally, a pacemaker should be inserted at the first sign of second or third degree heart block or standstill.

The value of direct-current cardioversion for the treatment of rapid arrhythmias such as atrial tachycardia, atrial fibrillation, atrial flutter, ventricular tachycardia, and ventricular fibrillation is now firmly established. Despite the remarkably few serious complications observed, problems still surround the procedure. Serious arrhythmias may appear at the time of reversion. These are especially likely to arise in the presence of digitalis intoxication, A-V node disease, or hypoxia due to poor ventilation. Digitalis should be omitted for several days if at all possible before reverting atrial fibrillation in order to minimize this complication. After cardioversion, several patients have been observed to have developed pulmonary edema. It has been postulated that after countershock the right ventricle and atrium begin to refunction slightly earlier than do the left, resulting in the congestion.

The last group of arrhythmias to be discussed are those that involve disorders of cardiac conduction. Included here are the various degrees of heart block. Meltzer's article gives the incidence of first and second degree heart block after acute myocardial infarction as varying from 12 to 23 per cent and third degree heart block as 2 to 8 per cent. In Lown's series of 130 patients he found that the incidence of both second and third degree heart block was 4.6 per cent. Generally speaking, advanced degrees of heart block develop slowly and give adequate time for intervention. First degree heart block does not necessitate treatment but when it develops, the patient should be observed very closely for progression to second or third degree block. First degree heart block does not produce symptoms or any significant alteration in cardiac function. Slight prolongation

of the P-R interval when a patient is receiving digitalis is not a contraindication for continuing the drug as long as higher degrees of block do not develop.

Second degree heart block, both the Wenckebach phenomena and that form of block where a disturbance in A-V conduction allows only every second, third, or fourth impulse from the atria to be conducted to the ventricle, may interfere seriously with effective cardiac function. When the block appears to be related to drugs such as quinidine or digitalis, the drug should be withheld until the block disappears. When second degree heart block develops after an acute myocardial infarction, the right coronary artery is likely to be involved as this artery, in 90 per cent of people, supplies the A-V node as well as the inferior and posterior aspects of the heart. The second degree block may be spontaneously corrected if hypotension or congestive heart failure are corrected. Demerol® with its mild atropine-like effect is probably the drug of choice for pain in patients with myocardial infarction complicated by a second degree heart block. Morphine should be used with caution in this condition because of its vagomimetic action and its likelihood to contribute further to the block. If morphine is used, a small amount of atropine, 0.4 milligram intramuscularly, should be used for each 15 milligrams of morphine to counteract the vagal-like effect. Atropine should be used in an effort to decrease vagal tone which can be involved in the production of heart block. One should use from 0.6 to 1.0 milligram of atropine intravenously and repeat this three or four times daily if effective. Isuprel® may be used if atropine is not effective. The usually accepted method of administering Isuprel® is to put 2 milligrams in 500 cubic centimeters of D₅W and infuse intravenously at a rate sufficient to abolish the block, this being variable from patient to patient. If the block persists after institution of these measures, placement of a transvenous pacemaker is the appropriate therapy.

Complete heart block is generally said to be present when the A-V node fails to conduct any impulses from the atria to the ventricles. This condition is seen most frequently in inferior infarctions. If it appears after an anterior or lateral infarction it is more likely to have been caused by a bilateral bundle branch block. This latter condition carries an extremely grave prognosis. Complete heart block following an inferior or posterior infarction is usually transient and seldom lasts longer than three to four weeks. In the treatment of complete heart block, atropine has been found to be of value in some cases in a dosage of 1 milligram every six to eight hours. This is no longer considered treatment of choice by most authorities but may be temporarily effective.

Numerous studies have been undertaken to determine the effectiveness of ACTH and corticosteroids in the therapy of heart block following an acute myocardial infarction. Some investigators advocate a single large dose of 300 to 500 milligrams of hydrocortisone intravenously for all patients with second or third degree heart block. The rationale for the use of steroids in this condition relates to its anti-inflammatory properties and to the idea that heart block may be due to a reversible inflammatory reaction in the area of the A-V node and bundle of His. Evidence shows that perhaps steroids can increase the responsiveness of the myocardium to catecholamines and to sympathetic stimuli and to sympathomimetic drugs. Studies have shown that adrenal steroids have a distinct accelerator effect on A-V conduction in studying P-R intervals in normal subjects and in people with adrenal insufficiency and Cushing's syndrome. Finally, the effects of steroids on serum potassium may be important. It is apparently safe to use steroids on short term basis. In experimental production of myocardial infarction in laboratory animals, cortisone appears to have no detrimental effect on the healing process.

When episodes of ventricular tachycardia or ventricular fibrillation interrupt A-V block, the use of quinidine and procaine amide is contraindicated as these drugs further depress A-V conduction.

The relatively recent introduction of artificial endocardial pacing by means of transvenous bipolar electrodes placed into the right ventricle has provided the technical means for rapid and effective control of electrical stimulation of the heart. In the study cited the authors divided their patients who developed advanced A-V block after acute myocardial infarction into three groups. The first group included those patients who developed advanced A-V block very early after the infarction and who presented as such when seen initially. The second group consisted of patients who presented initially with normal sinus rhythm but who had some intraventricular conduction disturbance consisting of right, left, or bilateral bundle branch block. Frequently seen in this type of individual were sudden changes to complete heart block, cardiac arrest, and recurrences of these complications. The third group presented with neither atrioventricular nor intraventricular conduction disturbances but who then developed advanced block progressively over a one to three day period. These authors consider there to be four indications for the use of a transvenous electrode catheter following an acute myocardial infarction. These include: (1) patients with normal sinus rhythm with evidence of intraventricular conduction disturbances; (2) patients with second degree heart block; (3) patients with third degree heart block, and (4) patients who exhibit episodes of cardiac arrest. The catheter should

be inserted as soon as possible after recognition of any of the above criteria as waiting for complications to occur often results in technical difficulties. Advanced A-V block may recur so premature removal of the pacemaker should be avoided. Slowing of the pacemaker and observing the patient to determine if his own heart can function spontaneously is important before removing the catheter. The heart's own conduction system can be depressed by the "over-drive" effect of the pacemaker and this should be gradually overcome by slowing the pacemaker to allow intrinsic pacemakers to operate.

Some pacemakers in current use, whether they are of the transvenous type or of the permanent implanted type, stimulate the ventricle at a fixed rate according to the predetermined setting. In patients with complete heart block and a slow stable rhythm, this mode of pacing is perfectly adequate because the pacemaker will assume complete control over ventricular contraction. In a large proportion of patients who need artificial pacing, however, the disturbances in A-V conduction are intermittent and transient with the result that the normal intrinsic pacemaker competes with the electrical extrinsic stimulus for the capture of ventricular beats. Some patients, after relatively short-term pacing, will revert to a normal sinus rhythm. When they are given a fixed rate continuous pacemaker, not only does the cardiac rhythm become bizarre but the pacemaker impulse also may fall in the vulnerable period of the spontaneous beat and initiate episodes of repetitive ventricular contractions which may lead to ventricular fibrillation. This danger provides a compelling reason for using a pacemaker system which will automatically stop stimulating when it is no longer required and resume stimulation when there is a demand. With a demand-type pacemaker, stimulation can take place only when a preset interval after the preceding ventricular contraction has been exceeded. If the ventricle contracts spontaneously before the preset delay has expired, electrical stimulation for that particular heart cycle is cancelled. In such a system the electrical impulse cannot fall into the vulnerable T-wave interval of the cardiac cycle, whether the ventricular contraction is initiated from the sinus node or from an ectopic ventricular focus.

The preferred method of insertion of the transvenous bipolar electrode utilizes fluoroscopy with an image intensifier in order to guide the electrode carefully into the area of the right ventricle. The areas of insertion of the catheter pacemaker, in preferred order are: the right external jugular vein, the left external jugular vein, the internal jugular vein on either side, and the cephalic vein. Veins in the arms are less desirable because of the possibility of dislodging the electrode in the right ventricle by excessive or sudden movement of the arm.

Complications following placement of the pacemakers are rare but one should be aware of the possibilities. Arrhythmias secondary to electrical competition may be avoided by the previously discussed demand pacemaker. A very rare complication is the production of arrhythmias by mechanical stimulation of the endocardium by the catheter itself. Perforation of the myocardium, infection, and embolism as well as displacement of the catheter are complications which should be kept in mind.

Some authors advocate the removal of the pacemaker electrode two days after the return of normal sinus rhythm, with constant monitoring for three more days. When complete heart block persists for three weeks after an acute myocardial infarction it is usually necessary for the implantation of a permanent pacemaker.

At times a pacemaker may fail to operate properly. The cause of malfunction should be corrected as soon as possible. Various reasons for failure are: malposition or breakage of the catheter, poor electrical connections, and loss of myocardial reactivity, the latter usually being a terminal event. A study of the pacemaker artifact by a standard EKG, recording of endocardial leads from the catheter, and radiographic studies may all aid in determining the cause of the difficulty.

It is now well established that pacing the heart at a faster rate generally abolishes serious ventricular tachyarrhythmias when they occur in heart block. Reports have recently appeared describing the value of rapid cardiac pacing to suppress serious ventricular arrhythmias refractory to the usual pharmacological treatment even in the presence of normal A-V conduction. Recurrent ventricular tachycardia and fibrillation which are refractory to drug therapy often respond to rapid pacing by means of a bipolar pacing electrode set at a rate of around 120 per minute. In this type of pacing with intact A-V conduction, either the right atrium or the right ventricle may be used as the pacing site. There would seem to be several advantages to stimulating the heart from the right atrium. There is preservation of the cardiac output that occurs when a coordinated atrial contraction properly precedes ventricular systole. There is less danger of the electrode itself generating further ventricular irritability when its tip lies in the right atrium rather than the right ventricle. In most cases, the right atrium can be satisfactorily paced unless atrial fibrillation or atrial flutter is present. When digitalis intoxication is the cause of the uncontrolled ventricular arrhythmias and drugs are not effective, rapid atrial pacing until the excess digitalis has worn off may be of value.

Worthy of note at this point in the presentation is a brief discussion of two experimental methods in the treatment of myocardial infarction. Because of the

vital role of oxygen in maintaining myocardial function, the application of hyperbaric oxygenation to patients with acute myocardial infarction has been suggested. In theory the approach seems feasible but the only human series of meaningful size has shown no statistically significant effect. More controlled studies may prove interesting in this area. The use of combined potassium, glucose, and insulin therapy in acute myocardial infarction has been studied. The theory proposes that potassium is lost by ischemic myocardial fibers and increased myocardial irritability results. The regimen acts by forcing extracellular potassium back into the cells thus restoring a normal state of polarization. There exists possible serious complications in using this method, but more studies could prove beneficial.

Appropriate, aggressive, and skillful use of anti-arrhythmic drugs and electrical techniques will control life-threatening arrhythmias in most cases. The effective treatment of arrhythmias decreases substantially the incidence of cardiac arrest and permits recovery from this complication when it occurs, but most importantly, improves survival after acute myocardial infarction in patients without shock. Unfortunately, anti-arrhythmic techniques have not decreased the mortality in patients with intractable heart failure or cardiogenic shock. Severe cardiac decompensation after an acute myocardial infarction continues to be a problem unsolved by current techniques. The application of new experimental methods for artificially supporting the failing circulation may decrease mortality and restore sufficient cardiac function to permit nearly normal activity. Only time and extensive investigation will determine the potential salvage rate of patients with shock or refractory heart failure due to acute myocardial infarction.

The concept of establishing in the hospital a specialized unit designed, equipped, and staffed specifically for the care of patients with acute myocardial infarction has recently been receiving wide acceptance in the medical profession. Attention has been focused on the problem of acute myocardial infarction, complications, prognosis, and treatment. The idea of the coronary care unit stemmed from the need to lower the mortality rate of myocardial infarctions and to obtain a higher incidence of cardiac resuscitation. Prior to the development of the coronary care unit, studies showed that approximately 45 per cent of deaths from myocardial infarctions were due to electrical failure of the heart. Such deaths now seem unnecessary and preventable. Emphasis has recently changed from resuscitation to the prevention of disturbances which would require resuscitation. The aggressive treatment of arrhythmias has been shown to significantly reduce the incidence of ventricular fibrillation. In private hospitals without coronary care units admitting patients with acute myo-

cardial infarctions, the mortality rate has been around 35 to 40 per cent. Unexpected cardiac arrest, frequently preceded by prodromal arrhythmias, may occur in 10 to 20 per cent of cases. In Day's series of 411 patients seen over a period of five years and treated aggressively in a coronary care unit, a significantly decreased mortality rate of 20 per cent was obtained. Of the patients included in this study, 78 per cent showed some arrhythmia in the first 72 hours and 50 per cent had what were considered to be major ventricular arrhythmias. If the objective is prevention which can be achieved many times with drugs, why not place every patient with an acute myocardial infarction on a fixed anti-arrhythmia program? At the present time standardization of treatment seems unwarranted because there is too great a variation in patient response to the therapeutic and toxic properties of these agents to justify such an approach. To date, none of the drugs is effective against a single type of arrhythmia in different patients. Some patients may require the combining of two or three drugs for effective management. The policy should be and remains to be one of emphasizing flexibility and individualization in patient care and utilizing the least amount of the most effective agent for a particular disorder.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 1300 Topeka Avenue, Topeka, Kansas 66612.

NEW DRUG APPROVED BY FDA

A drug long under study for the treatment of inoperable testicular tumors and certain other conditions related to cancer will soon be available to physicians.

Called mithramycin, it will be marketed under the trademark Mithracin by the Pfizer Laboratories Division, Chas. Pfizer & Co., Inc. Approval by the U. S. Food and Drug Administration has been published officially in the Federal Register.

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The President's Message

To help improve the communications gap within our Society, I will briefly outline the basic structure of the determination of policy and action of our Society. Some of the information is known by those who have been delegates or have been on other Society committees, but I have been concerned that there is so little understanding by many of our members.

I will give an overall view at this time then will elaborate on more specific details in the next three issues of the JOURNAL.

The bulk of the work of the Society is done by committees who address themselves to specific areas of concern. These concerns are identified by many sources, i.e. the plans of the President, the Executive committee, the Commission chairmen, the Committee chairmen, individual members of our Society, the executive secretary, the assistant to the executive secretary, areas of organized medicine, government sources (state and federal), and many other interested parties.

To adequately perform these activities of our Society, five commissions have been formed, namely Health Services, Education, Socio-Economics, Scientific Study and Society Organization. In order to coordinate the function of the commissions and to prevent unnecessary reduplication, all items are referred to one of the committees serving under the appropriate area of commission concern.

After each committee investigates and studies assignments, recommendations and resolutions are submitted to the commissions which meet semi-annually or more frequently if necessary. These resolutions and recommendations are then discussed and submitted to the House of Delegates for action by the delegates. The resolutions are presented at the first meeting of the House, assigned to reference committees where discussion by *any member* of the Society is invited. They are then returned to the second meeting of the House for final action by the elected delegates. The number of delegates is in proportion to the total membership of each component society.

The Council was formed to act when the House is not in session and to administer funds. The Council is composed of the elected officers, one representative from each district, and one from each speciality society. There are several additional duties of the Councilor including serving as a direct liaison between the Executive committee and the general membership and as a member of the Ethics committee, the Selective Service committee, the Peer Review committee, the Utilization committee, the Legislative committee and other delegated responsibilities.

The Executive committee provides leadership, supervises and coordinates Society activity, carries out House determined policy, maintains communication with the above described organizational units of the Society and with individual members. This committee meets on call of the President—usually about every six weeks.

Next month—the Commissions.



Francis J. Collins

President



Editorial COMMENT

The Kansas primary is only a few days away. Each party will select its slate of candidates and your choice is narrowed. Do you, today, know the differing views of those who oppose each other in your political party? Do you know their opinions on subjects affecting your professional service and the health of the people?

In some areas the doctors know this. A group of physicians in Johnson County prepare a questionnaire on health related subjects and invite candidates to express their opinion. The replies, with the candidates' permission, are offered to anyone who is interested.

In Sedgwick County, physicians with a deep feeling of political responsibility meet with candidates in open discussion of a variety of topics. The doctor and the politician learns the view of the other and gains in understanding. In other areas of the state similar effort is taking place. It should everywhere.

The informed citizen votes intelligently. He demonstrates his interest in good government and speaks with conviction to his friends and associates. It is, of course, impossible to assess how many others such a good citizen can persuade to join in his effort but one thing is certain—his influence is greater than if he did nothing. And it could be the overriding factor for victory.

When has health and the delivery of health services been so dominant in the news and so involved in the political arena? Was there ever a time when the people of this state more desperately needed informed leadership? The one best qualified public official will not be on the November ballot if he does not win in the primary. So, the primary election might well be the more important. Late, you say? Yes, but during the few weeks that remain there is still time to learn what the candidates think, to ad-

vise them in areas where you are expert and to tell your friends why one will better serve them in matters relating to health care.

Incidentally, there is no law to prohibit anyone from changing party affiliation in the support of a candidate of exceptional intelligence and integrity, is there?

The Primary Election

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

Charles R. Block, M.D.
3244 E. Douglas
Wichita, Kansas 67208

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Orville A. Zeller, M.D.
2322 E. Central
Wichita, Kansas 67208

Education-Information

Program Report (May 15-June 15)

HANK PARKINSON, *Coordinator*

THE SOCIETY'S EDUCATION and Information Program officially began May 15.

Since close liaison with officials of the organization is the key to the program's success, it was agreed that meetings would be held each Thursday in Topeka with KMS president, Dr. Francis T. Collins, and Oliver Ebel. News release themes and other projects are finalized at these sessions and implemented during the week.

A "deadline memo" basis was finalized. Under this system, a release is prepared with a covering memo and sent to Dr. Collins, Dr. Kenneth L. Graham, Dr. William J. Reals, Dr. Norton L. Francis and Mr. Ebel, plus any other KMS member that is quoted or referred to in that particular release. Each person mentioned on the memo is given three days to call the agency if changes or corrections are in order. This system assures the validity of the release in question and still allows the Society to respond on given issues in an appropriate amount of time—such as one release which took umbrage with the U. S. Department of Health, Education and Welfare over the way it occasionally releases information on drugs.

Shortly after the first meeting, the agency prepared a state and national media list which includes all daily and weekly newspapers, all radio and tele-

vision stations and selected national media. While every release is not sent to this comprehensive list, occasional items of importance are.

Releases written and distributed during the 30-day period included:

1. The three-man KMS delegation attending a regional comprehensive health care conference in Palm Springs, California.

2. A KMS co-sponsorship with the American Cancer Society of two cancer chemotherapy seminars in Western Kansas.

3. The report on new legislation concerning rubella immunization for young persons.

4. Society's posture on Health, Education and Welfare Department releases.

5. Appointment of Commissions chairman.

The release on Commissions chairman and the HEW story were both moved on the AP and UPI wires; extensive statewide print and electronic coverage resulted. The HEW release was further moved out of state, resulting in wide national exposure.

The agency is currently working on public service announcements which will be placed on air for us through the Kansas Association of Radio Broadcasters in July and August. A release is also being readied on Kansas' new abortion laws and will be distributed the latter part of June.





Personalities—IN KANSAS MEDICINE

Dr. and Mrs. Farris Evans and Dr. and Mrs. Willard Kiser, of Wichita, attended the meeting of the International College of Surgeons, Paris, France, in April.

Harry E. Watts has been elected president of the Hays Chamber of Commerce for the 1970-71 Chamber year.

New officers of the Kansas City Surgical Society, elected in May, include Don R. Miller, Kansas City, president, and Earl C. Sifers, Mission Hills, secretary-treasurer.

June 7 was "Dr. Cable Appreciation Day" in Leoti when community organizations and clubs sponsored an open house to honor Dr. T. M. Cable for 15 years of service to the community. Dr. Cable retired from practice last January.

John Travis, Topeka, was elected second vice president of Kansas Blue Cross at the annual meeting of the board of trustees held in Topeka in May. New physician representatives on the board include William R. Durkee, Manhattan, John B. Jarrott, Hutchinson. Reelected physicians are John O. Baeke, Overland Park and Dr. Travis.

James A. Ward, Belleville, was re-elected for a second, one-year term to the executive committee of the Kansas Public Health Association at the 28th annual meeting held in Wichita in May.

The Topeka Board of Education has appointed

Charles S. Joss, Topeka, to the Board of Regents of Washburn University.

Charles E. Brackett and Leonard F. Peltier, University of Kansas Medical Center, attended an international symposium on trauma in Washington, D. C. in May.

William R. Roy, Topeka, has announced his candidacy for U. S. Congressman.

Dr. and Mrs. S. C. McCrae, Salina, Dr. and Mrs. George Burket, Kingman, and E. F. Steichen, Lenora, were among those who participated in a three-week "people to people" tour to Africa in June. The principal purpose of the tour was to meet medical men in South Africa, Kenya, Uganda and Ethiopia and to visit medical institutions there.

Leland Speer, Kansas City, has filed for nomination to the Kansas House of Representatives from the 33rd District.

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RECENT ACQUISITIONS

- American Public Health Association. Health crisis in America; a report. New York, 1970.
- Association for Advancement of Behavior Therapy. Advances in behavior therapy, 1968; symposium held in San Francisco, August 1968. New York, Academic Press, 1969.
- Bryant, John. Health and the developing world. Ithaca, New York, Cornell University Press, 1969.
- Cheyne Walk Centre for Spastic Children. Cerebral palsy and the young child. Edinburgh, Livingstone, 1969.
- Cole, Warren Henry. Chemotherapy of cancer. Philadelphia, Lea & Febiger, 1970.
- Dental science handbook; a manual of information about dental science and dental practice prepared primarily for those in vocations other than dentistry. Washington, U. S. Government Printing Office, 1969.
- Dietrich, Shelby L. Hemophilia; a total approach to treatment and rehabilitation. Los Angeles, Orthopaedic Hospital, 1968.
- Douglas, Adrian Peter. A short textbook of kidney disease. Philadelphia, Lippincott, 1968.
- Glassman, Jacob A. Stomach surgery. Springfield, Illinois, Thomas, 1970.
- Hanitzsch, Eric G. The treatment of highway injury; an international bibliography. University of Michigan, Highway Safety Institute, 1969.
- International Congress on Alcohol and Alcoholism, 28th, Washington, D. C., 1968. Proceedings. Washington, Program Publications Committee 28th International Congress on Alcohol and Alcoholism, 1968.
- International Congress on Muscle Disease, Milan, 1969. Abstracts of papers presented. Amsterdam, New York, Excerpta Medica Foundation, 1969.

- International Society for Orthopedic Surgery and Traumatology. International Society for Orthopedic Surgery and Traumatology; XIth congress, Mexico, D. F., 6-10 October 1969. Amsterdam, New York, Excerpta Medica Foundation, 1969.
- Invitational Conference on Comprehensive Health Planning, Chicago, 1968. Papers. Chicago, American Hospital Association, 1969.
- Jacobson, Edmund. Modern treatment of tense patients; including the neurotic and depressed with case illustrations, follow-ups and BMG measurements. Springfield, Illinois, Thomas, 1970.
- Kiesler, Charles A. Attitude change; a critical analysis of theoretical approaches. New York, Wiley, 1969.
- Lee, Nancy Howell. The search for an abortionist. Chicago, University of Chicago Press, 1969.
- Maternity Center Association, New York. Prelude to action; report of the Maternity Center Association's 50th anniversary seminar on childbearing and family life. Princeton, New Jersey. New York, 1969.
- Milton, Ohmer. Behavior disorders, perspectives and trends. New York, Lippincott, 1969.
- Morris, Desmond. The human zoo. New York, McGraw-Hill, 1969.
- Newcombe, Freda. Missile wounds of the brain; a study of psychological deficits. London, Oxford University Press, 1969.
- New ideas in asthma and its management; papers read at a symposium held at the Bloomsbury Centre Hotel, London, 24th June, 1969. London, Health Horizon Ltd., for the Chest and Heart Assn., 1969.
- Organ Transplantation Symposium, Amsterdam, 1968. Organ transplantation today. Amsterdam, Excerpta Medica Foundation, 1969.

(Continued on page 294)

KANSAS STATE DEPARTMENT OF HEALTH
TOPEKA, KANSAS

Epidemiology & Disease Control Services—Registration & Health Statistics Services—Kansas Morbidity Incidence
Summary of Cases Reported in April, 1970 and 1969

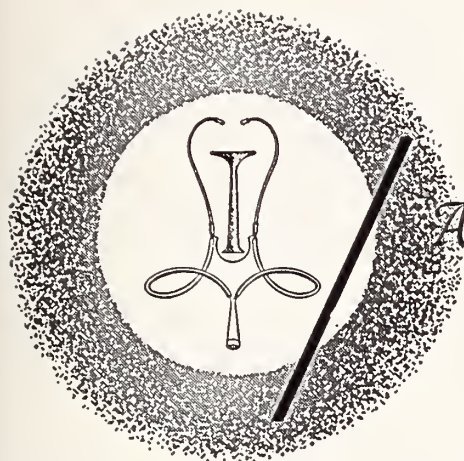
<i>Diseases</i>	<i>April</i>			<i>January-April Inclusive</i>		
	<i>1970</i>	<i>1969</i>	<i>5-Year Median 1966-1970</i>	<i>1970</i>	<i>1969</i>	<i>5-Year Median 1966-1970</i>
Amebiasis	4	—	1	8	—	4
Aseptic meningitis	1	1	—	3	3	—
Brucellosis	—	—	—	—	1	1
Diphtheria	—	—	—	—	—	—
Encephalitis, prim., infect.	1	—	1	3	2	2
Encephalitis, post-infect.	—	—	—	—	—	—
Gonorrhea	496	328	328	2,032	1,464	1,271
Hepatitis, infectious	45	24	24	175	115	94
Measles (Rubeola)	5	3	*	45	3	*
Meningococcal meningitis	1	2	1	1	13	6
Mumps	40	24	*	88	72	*
Pertussis	—	—	—	—	—	—
Poliomyelitis	—	—	—	—	—	—
Rheumatic fever	—	—	—	1	2	1
Rubella (German Measles)	23	8	*	37	30	*
Salmonellosis	18	15	15	53	49	56
Scarlet fever	8	—	4	67	21	48
Shigellosis	8	2	3	23	19	19
Streptococcal infections	450	120	293	1,108	1,328	1,282
Syphilis	120	162	112	470	627	354
Tinea capitis	1	6	6	11	17	20
Tuberculosis	25	32	25	76	76	77
Tularemia	—	1	—	—	1	1
Typhoid fever	—	—	—	—	—	—

*Statistics not available for 5-year median.

RUBELLA IMMUNIZATION PROGRAM

During the 1969-1970 school year approximately 78,000 Kansas school children have been immunized against rubeola. The success of this program has resulted from the splendid effort of county health officers, county public health nurses and school nursing personnel. For the coming school year, 1970-1971, the State Department of Health will have over 265,000 doses of rubella vaccine for prepubescent children. Special priority should first be directed toward school-age children, and then as vaccine is available, to pre-school age children.

The Kansas State Department of Health will continue to provide vaccine and technical assistance to all counties in planning for a rubella immunization program during the 1970-71 school year.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the DOCTOR'S CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

The World Health Organization will make available in 1971 to United States citizens engaged in operational or educational aspects of public health, a limited number of short-term fellowships for travel abroad related to the "improvement and expansion of health services" in the United States.

In selecting applications a special committee will consider the professional background of the individual, the field and locale of the study proposed, and the utilization of the experience by the applicant on his return. Employees of the federal government are not eligible. Applications will not be considered for the prosecution of pure research projects, for attendance at international meetings, nor from students in the midst of training at either the undergraduate or graduate level.

A fellowship award will cover per diem and transportation. Except in very unusual circumstances, it will be limited to short-term travel programs, i.e., two to four months. Employers of successful applicants will be expected to endorse applications and to continue salary during the fellowship.

Priorities of award will be established up to the total of the funds available. The deadline for the receipt of applications is September 30, 1970.

Further information and application forms may be obtained from Dr. Robert W. Jones, III, Chief, Foreign Students Education Branch, Bureau of Health Professions Education and Manpower Training, National Institutes of Health, Public Health Service, Room 1014, HEW-S, Washington, D. C. 20201.

JULY

July 27-29 Postgraduate medical assembly of South Texas, Astroworld Motor Hotel, Houston. Write: Mrs. W. H. Dahme, Exec. Secretary, Texas Medical Center, 209 Jesse H. Jones Library Building, Houston 77025.

AUGUST

- Aug. 12-15 World Conference on General Practice, Palmer House, Chicago. Write Mac F. Cahal, J.D., Executive Director, Volker Blvd. at Brookside, Kansas City, Missouri 64112.
- Aug. 20-22 Rocky Mountain Radiological Society, Brown Palace Hotel, Denver. For information write Lorenz R. Wurtzebach, M.D., 4200 E. Ninth Ave., Denver 80220.
- Aug. 20-22 Ninth National Conference on Therapies for Advanced Cancers, University of Wisconsin Postgraduate Center, Madison. For information write R. J. Samp, M.D., University Hospitals, Madison, Wisconsin 53706.

SEPTEMBER

- Sept. 14-16 Continuation course on *Current Practice of Clinical Electroencephalography*. Washington, D. C. Sponsored by the American Electroencephalographic Society. Write for information: Donald W. Klass, EEG Course Director, Mayo Clinic, Rochester 55901.
- Sept. 17-19 American EEG Society, Shoreham Hotel, Washington, D. C.
- Sept. 19-25 Annual Otolaryngologic Assembly of 1970, Eye and Ear Infirmary of the University of Illinois Hospital. Otolaryngologists should direct inquiries to: Otolaryngology, P. O. Box 6998, Chicago 60680.

OCTOBER

- Oct. 12-16 56th Annual Clinical Congress, American College of Surgeons, Conrad Hilton Hotel, Chicago. Write: Mr. T. E. McGinnis, ACS, 55 E. Erie St., Chicago 60611.
- Oct. 18-23 American College of Emergency Physicians, Scientific Assembly, Las Vegas. For information: Executive Secretary, 120 W. Saginaw, East Lansing, Michigan 38823.
- Oct. 22-24 Annual Fall Clinical Conference, Kansas City Southwest Clinical Society, Hotel Muehlebach, Kansas City, Missouri. Contact: Miss Alta L. Bingham, Executive Secretary, 3036 Gillham Rd., Kansas City, Missouri 64108.
- Oct. 23-30 98th Annual Meeting, American Public Health Association, Houston Civic Center, Houston, Texas. For information: Mrs. Marion Paul, American Public Health Association, 1740 Broadway, New York, N. Y. 10019.
- Oct. 25-29 36th Annual Meeting, American College of Chest Physicians, Century Plaza Hotel, Los Angeles. Write: American College of Chest Physicians, 112 E. Chestnut, Chicago 60611.
- Oct. 30-31 2nd Annual Birth Defects Symposium, *Disorders of Glucose Metabolism in Children*, University of Florida College of Medicine, Gainesville. Write: Mrs. Betty J. Howard, Div. of Postgraduate Education, J. Hillis Miller Health Center, Gainesville, Florida 32601.

Along the Bookshelf

(Continued from page 291)

- Pinkus, Hermann. A guide to dermatohistopathology. New York, Appleton-Century-Crofts, 1969.
- Selected papers on systems for health care delivery. University of Iowa, 1969.
- Sklansky, Morris A. The high school adolescent; understanding and treating his emotional problems. New York, Association Press, 1969.
- Sutherland, John M. The epilepsies; modern diagnosis and treatment. Edinburgh and London, E. & S. Livingstone, Ltd., 1969.
- Symposium on abuse of central stimulants, Stockholm, 1968. Abuse of central stimulants. Stockholm, Almquist & Wiksell, 1969.
- The epidemiology of oral health. Cambridge, Harvard University Press, 1969.

- Tuft, Louis. Allergy in children. Philadelphia, Saunders, 1970.
- Vernon, Magdalen Dorothea. Human motivation. Cambridge, England, University Press, 1969.
- Wright, Logan. Bibliography on human intelligence; National Clearinghouse for Mental Health Information; an extensive bibliography. Chevy Chase, Maryland, National Clearing House for Mental Health Information for sale by Superintendent of Documents, U. S. Government Printing Office, 1969.
- Zamir, Lelia Jaffe. Expanding dimensions in rehabilitation; a reference for the health professional. Springfield, Illinois, Thomas, 1969.

FIVE-YEAR STUDY FINDS VENOGRAPHY VALUABLE IN ABDOMINAL WOUNDS

Emergency venography and delayed pyelography can provide valuable diagnostic information for pre-operative evaluation of patients with suspected penetrating abdominal wounds, according to an investigative team at Case Western Reserve University School of Medicine.

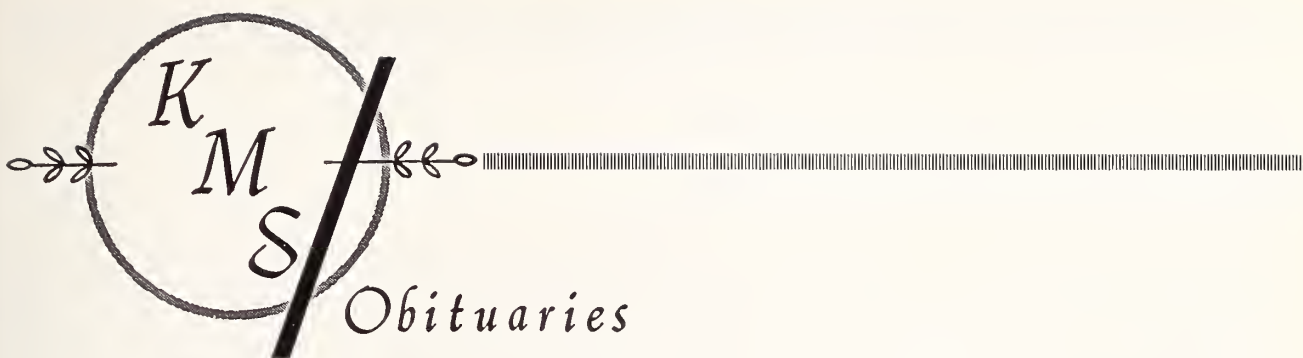
Reporting on a five-year study in the *Journal of Trauma* (10:32, 1970), Drs. Christopher J. Heller and Charles A. Hubay say the radiographic procedures were performed with little risk and morbidity. One hundred patients with gunshot or stab wounds underwent abdominal exploration, followed by emergency venography in 20 cases. The contrast agent Hypaque (sodium diatrizoate, Winthrop) was injected into the saphenous or femoral vein. Pyelograms were generally obtained five minutes after inferior vena cavography.

The investigators commend the diagnostic value of the two procedures especially in patients with gunshot wounds who, they found, had a 25 per cent incidence of major venous or renal injury.

"Knowledge of contralateral renal function at the time of exploratory laparotomy is essential to the surgeon faced with renal injury," the study notes.

The authors say that venography is not recommended for patients with penetrating abdominal wounds and uncontrolled hemorrhagic shock who are deemed to be in critical condition. In these circumstances, immediate surgery to control the bleeding is the major consideration. However, they note, venography can be performed in those patients in shock who rapidly respond to resuscitative measures without causing any delay in operative intervention.

Most common complications were found to be local hematoma and local extravasation, both of which occurred less frequently once there was greater familiarity with the techniques.



DUDLEY B. C. CHADS, M.D.

Dr. Dudley Beric Chads, 49, Kansas City, Kansas, died at Bethany Hospital in Kansas City on June 4, 1970.

Dr. Chads was born in Medicine Lodge and lived in Kansas City, Kansas, for 18 years. He was graduated from the University of Kansas School of Medicine in 1956. He held degrees in bacteriology and chemical engineering from the University of Kansas.

Survivors include his wife and three daughters. The family suggests memorials to the Dr. Chads memorial fund at Bethany Hospital, Kansas City, Kansas.

CHARLES A. FISHER, M.D.

Dr. Charles A. Fisher, Paola, died May 29, 1970, at the Miami County Hospital. He was 92 years old.

He was born at Beagle, Kansas, on July 18, 1877. He received his degree in medicine from the Medico-Chirurgical College of Kansas City in 1901. He had been a practicing physician in Miami County for over 60 years, and since 1918 had lived in Paola. He retired because of ill health in 1963.

Dr. Fisher is survived by his wife.

P. F. GATLEY, M.D.

Dr. P. F. Gatley, 93, a practicing physician in Louisburg for more than 60 years, died on May 13, 1970, at the Wesley Medical Center in Wichita.

Dr. Gatley was born November 18, 1877, on a farm near Hatfield, Missouri. He received his medical degree from the University Medical College of Kansas City in 1902 and began his medical practice at Bucyrus, Kansas, later that year. He moved to Louisburg, where he continued to practice until his retirement in 1969.

He is survived by a daughter.

EDWARD J. GROSDIDIER, M.D.

Dr. Edward J. Grosdidier, 69, Kansas City, Kansas, died June 9, 1970 at St. Margaret Hospital.

Dr. Grosdidier was born in Eudora, Kansas. He was graduated from the University of Kansas School of Medicine in 1933, and had practiced in Kansas City, Kansas, for 35 years.

Survivors include his wife and three daughters.

G. SHERMAN RIPLEY, JR., M.D.

Dr. Sherman Ripley, Jr., 53, Salina, died at Asbury Hospital in Salina on May 14, 1970.

Born February 19, 1917, at Hartford, Connecticut, Dr. Ripley received his doctor of medicine degree from Tufts University Medical School, Boston, in 1943. Dr. Ripley had practiced in Salina since 1948 following radiological residency at the Presbyterian Hospital, Philadelphia.

Dr. Ripley is survived by his wife, mother, two daughters and two sons.

AAGP Medicare / Medicaid Survey

Family Doctors Are Making More, But Working More, Survey Shows

A NEW SURVEY shows that U. S. family doctors have increased their income since Medicare and Medicaid began in 1966, but only by slightly over 25 per cent for the highest percentage-of-increase group. At the same time, this group—working an average of 59 hours per week in 1965—increased the number of hours worked per week by 15 per cent and number of patient visits by the same percentage.

The survey results reflect income and related practice data of 1,000 members of the American Academy of General Practice, national association of family doctors. Respondents represent an at-random cross-section of the United States. They were requested not to sign the survey forms or give any identifying information, and advised that no attempt would be made to monitor postmarks or relate responses to the mailing list in any way.

The purpose of the survey was to find out how much family doctors had benefited financially from the two big federal health programs. A recent national publication had suggested there had been increases in earnings of as high as 71 per cent since Medicare. This survey does show a rise in net earnings in all groups (categorized by hours worked per week), but these percentage increases range from 5.3 per cent for doctors working 41-45 hours per week to 26.3 per cent for the highest group in terms of percentage increase, doctors who work 66-70 hours per week.

Doctors working over 70 hours per week increased their earnings by only 18.6 per cent. The highest percentage-increase-group of doctors, which had an average before-tax income of \$36,454 a year in 1969, actually increased its net earnings per patient visit by only 30 cents between 1965 and 1970.

Significantly, the survey shows that, while number of hours worked per week and number of patient visits per week have gone up considerably for many of these doctors, the time spent per patient visit has remained about the same. For example, the number of patients seen per hour is three and a fraction in all categories now and was just about the same in 1965. This data indicates approximately 18 minutes per patient visit in all categories.

The survey did show that all respondents had at least a small increase (5 per cent or less) in net earnings as a result of Medicare and Medicaid. This tends to support the contention of many doctors that they

now are being paid for the services that they rendered free of charge before the federal programs came into existence. This payment thus became primarily net profit because costs already were factored in for patients not previously charged for service who later became Medicare patients.

The survey shows some other interesting facts. For instance, the family physician in general practice frequently is thought of as being largely a creature of small towns or rural areas. This study of a true vertical and horizontal cross-section (on the basis of postal zip codes) shows that 81 per cent of all respondents live and practice in towns larger than 5,000, and that 33 per cent of them live and practice in cities of over 100,000 population.

Along these lines, too, the survey shows that 57 per cent of doctors who work less than 40 hours per week practice in towns of less than 25,000, and, by contrast, less than 10 per cent of the small number of respondents (28) working less than 40 hours work in towns of more than 100,000. At the same time, the survey shows that more doctors in towns of 5,000-25,000 worked more than 61 hours per week than did doctors in any other community-size category. In other words, it would appear that rural and small-town doctors do not necessarily, according to this survey anyway, appear to be any more overworked than doctors in larger centers.

A generally-held myth that this survey appears to open to serious questions is the one contending that group practice allows the doctor the most free time. Respondents in this survey report that 39.5 per cent of all those in group practice work more than a 60-hour week. At the same time, only 44.6 per cent of solo practitioners, long held by many medical circles to be the most overworked and harried of all U. S. doctors, worked more than 60 hours a week.

The most significant general conclusion from the survey would appear to be that the more a doctor works, the more he can earn, but not in direct ratio to additional hours worked. This is illustrated by the net increase in earnings per patient visit since 1965. For all doctors working between 41 and 65 hours per week, this increase is stabilized at an average of about 44 cents. It drops off sharply to 30 cents in the 66-70 hour-per-week group, and plummets to a 14 cent increase per patient visit for the more than 70 hour-per-week group.

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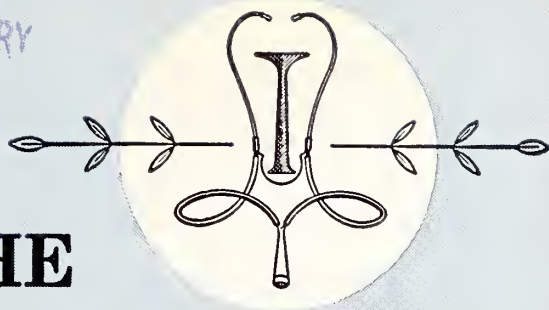
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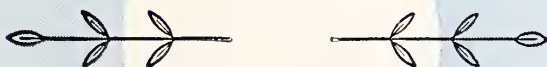
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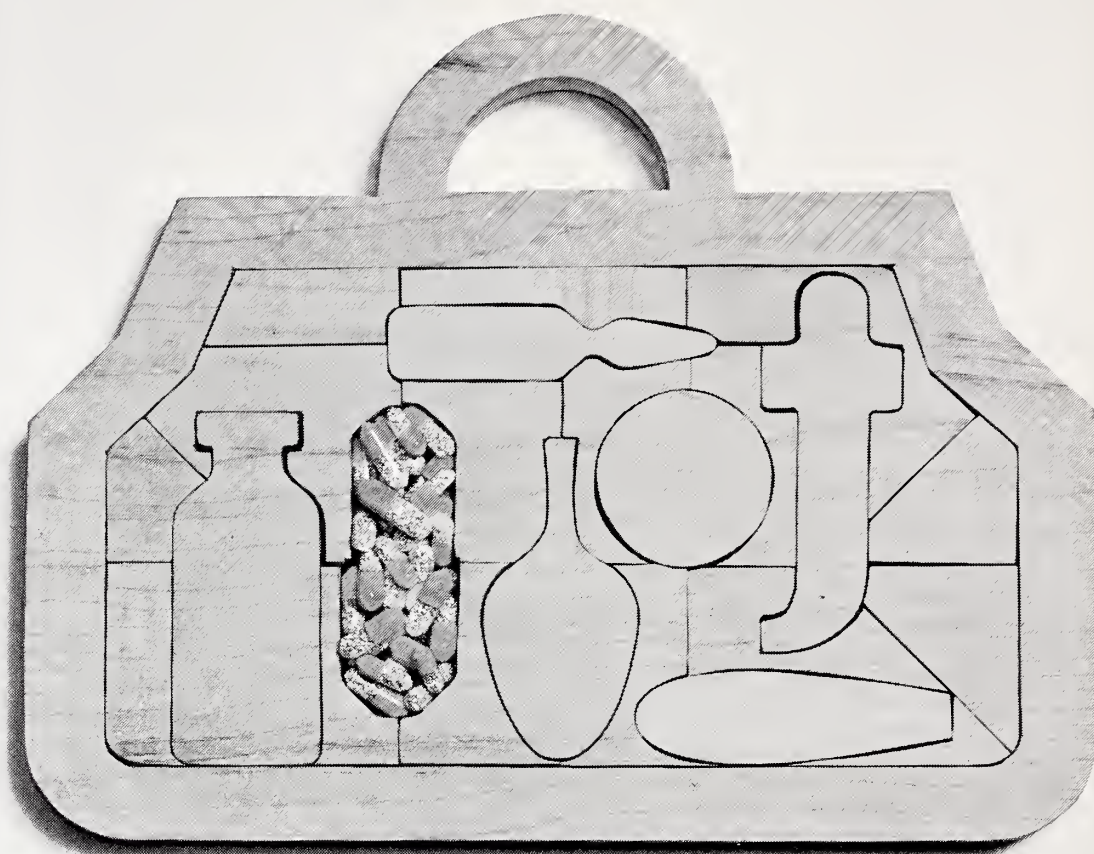
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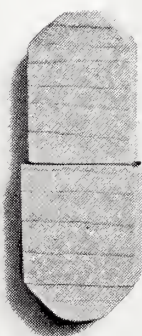
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The Arthur E. Hertzler Memorial Lectures

The year 1970 marks the 100th anniversary of the birth of Arthur E. Hertzler who, by his character and acumen, created a medical legend and left a medical heritage which have been outstanding among the contributions of Kansas to the Medical World. The reality of his accomplishments would survive alone but, in order to recognize and perpetuate the spirit of these accomplishments, the Hertzler Research Foundation has established the Arthur E. Hertzler Memorial Lectures as an annual presentation.

The first of these lectures was given in Halstead on April 25, 1970, and ranged from warmly personal and informal remarks that reflected the medical personality to clinical presentations that reflected the medical scientists.

The JOURNAL is pleased to participate in honoring the memory of the man whose self-assigned "horse-and-buggy" appellation served as counterpoint to the sophistication of his medical thought by the presentation of the remarks of three of the speakers.

Arthur E. Hertzler, M.D.

Fifty Years Ahead of His Time

BRIAN B. BLADES, M.D.,* *Washington, D.C.*

TRIBUTE IS PAID TODAY to the memory of Dr. Arthur E. Hertzler, born April 25, 1870, and died September 12, 1946.

I should like to imagine, turning back the clock of life 50 years, in an attempt to anticipate Dr. Hertzler's reactions to our medical world in the United States today and particularly the condition of American surgery.

It is safe to say Dr. Hertzler was considered a maverick, a dissenter concerning some of the accepted practices sponsored by his colleagues. Today, I am sure, he would be an extremely valuable maverick, wondering verbally and almost certainly loud and clear, how we have so often turned our big, glossy universities into places where the thinking ones, the mavericks, have found it difficult to endure. Many campuses and in some instances, medical schools are in the hands of the unaware, incurably, unconsciously, second-class minds with a goal of reasonable competence, reasonable security and considerable self esteem.

Perhaps this is a proper end product. All mavericks ever do anyway is to make the normal, cautious people uncomfortable and provoke many futile meetings of the curriculum committee which tries its best to conceive a program allowing all concerned to race like lemmings to the warm sea of total adjustment.

Dr. Hertzler might consider the quality of the teacher more important than the precise, ever-changing teaching programs including a small dollop of every aspect of medicine and allied sciences. His feelings on this matter might be summarized by a statement he made more than 30 years ago, "Nowadays many small courses are given, too numerous to mention and too brief to make it possible for the student to learn anything worth while about them."

More of the same discussion: "Superficial courses only detract from the things worth while. The latest of these courses is medical sociology. The next course, I predict, will be a course in medical hemstitching or doily making. These courses will be valuable in enabling the doctor to contact neglected ladies."

The demonstrations on numerous college campuses in our country and throughout the world approach anarchy in some instances. Fortunately, most of the violence in medical schools has been verbal in nature. However, violence is catching. Before we have a serious problem in medical education, all of us are obligated at least to attempt to take a fair and critical look at precisely what we are up to.

For 24 years it has been my privilege as Professor and Chairman of a Department of Surgery to attempt to develop with the help of my colleagues a useful and outstanding teaching program both for undergraduate and graduate students. As far as I know, although I might be the last to know, we have had no serious criticisms. There are, of course, complaints, gripes; some constructive and others, in my opinion not workable and made through the inexperience of those who have invented them. If there were no complaints at all, it would indicate a serious and probably a hopeless situation.

Nevertheless, a faculty-student conference, or now fashionably known as a workshop, is to be held in our institution; I'm happy to say, during my absence to be here today. The subject of the workshop is *The Angry Student*. I've asked the younger and far more valuable members of our faculty just what our students want. I am told their goal is relevance which according to Webster means "concerning the case in question, pertinent, applicable." It appears the workshop will have plenty of work.

I would now like to quote a part of a paragraph by Dr. Hertzler from *The Horse and Buggy Doctor*. "When I began my medical teaching more than 35 years ago I learned the difficulties attending the lecturing to students. It was a ticklish business because in those days if students did not like an uninteresting teacher; they hooted him and if he did not take the hint they threw tin cans and rubber shoes at him. Then the trustees had to elect another professor. It may be explained that many schools of that day were so-called proprietary schools, that is private schools which were dependent upon overhead expenses on the fees the students paid. Teachers could be had for the asking but to expel a student meant the loss of his

* Presented at the first annual Arthur E. Hertzler Memorial Lectures, April 25, 1970, Halstead, Kansas.

tuition." Tin cans and shoe throwing is not indulged in today but teachers remain expendable.

Dr. Hertzler's presence with the so-called angry students would be a tremendous help today. He might effect a cure, especially if he took them to a ball game in lieu of an examination.

The record proves that Dr. Hertzler was a masterful technical surgeon. In his earlier days there was little support in the way of trained anesthesiologists, hence his monumental studies concerning local anesthesia, an art which is now neglected. Speed was of the essence. His technical abilities, in my opinion, however, were the least important of all his contributions.

A skilled technician need not be an educated man. He is a useful man and often a contented and busy man. He may, however, miss the sense of mystery and wonder and paradox of life as it affects the human body. The late Alfred Blalock was fortunate enough to have a diener, or better said, an assistant in his laboratory for many years. This man was a fine, gentle Negro with little or no formal education but was a master technician. All Dr. Blalock had to do was instruct him in any laboratory operation he wished to study and his self-educated technician did it well. In fact, Alfred once told me about one-half facetiously and one-half seriously, "This man should have operating privileges at the great Johns Hopkins Hospital since he is a better technical surgeon than anyone on the staff including myself."

It is difficult, in fact impossible, to name a single facet of Dr. Hertzler's life which made him world famous, a fact I suspect did not impress him. He saved many lives and suffering of those who were fortunate enough to have him as their doctor and friend.

Research? Writing? Teaching? Probably a combination of all three mixed in proper proportion.

If there is lack of interest in any of these fields, a surgeon becomes a technician and operator and not a complete surgeon. The proportions of the admixture depends upon the individual, his environment and opportunities.

RESEARCH: Dr. Hertzler's interests were so diversified, it is difficult to single out his contribution of greatest value. If I were forced to make a selection, it would probably be his studies concerning the peritoneum. There would be, of course, others who considered his histopathological investigations and subsequent clinical application in diseases of the thyroid gland to be of greater importance.

The defense of my first choice is that the basic fundamental investigations of the peritoneum and

related wound healing finally established the futility and dangers of attempting to drain a generalized peritonitis. Before this was appreciated, all sorts of technical maneuvers to establish drainage in cases of generalized peritonitis cost many lives and were generally unsatisfactory.

His extensive studies of thyroid disease for a period of years forced the abandonment of the old ring of steel technique for thyroidectomy, which in many cases was a bloody biopsy. The importance of extirpating all of the diseased gland required a clean anatomic dissection for removal of the organ.

Limitations of time precludes any discussion of all of Dr. Hertzler's investigations in all fields of surgery. Many of these were 50 years ahead of the times and quite often not acceptable to his colleagues. This is especially true of his conclusion concerning diseases of the peritoneum and of the thyroid gland.

Research is a poor term, the literal meaning is to search again or to reevaluate former investigations in efforts to confirm or reject the findings of others. This is important, but many of Dr. Hertzler's studies would better be called *prosearch*. That is a study of the unknown in an effort to establish findings and facts without previous guidelines.

Another semantic ugly is "the pure research man." This by usage often is applied to a person or persons who do not engage in and may have little or no interest in clinical activities.

As a natural consequence of the pure research man there have developed some inadequate surgical terrors commonly called academic surgeons. I believe I am entitled to make these remarks since I have been associated with medical schools, except for army time, all of my medical life. I have never had an outside office but have never relinquished my interest and activities in clinical surgery. Despite this background, I am happy I cannot be considered eligible for the classification of one engaged in academic medicine.

The word academic is defined as follows, "conforming to set rules or traditions, conventional." Medicine is defined as, "the science of treating disease or preserving health." Certainly one could not ask for a more honorable and satisfying career, namely treating disease and preserving health. If the definition of academic is strictly interpreted, however, imagine the effects on teaching, patient care and in some instances research, if our field was dominated by surgeons bound to conform to a set of rules or traditions.

The late Fred Rankin classified surgeons into

two categories. One, the cat and doggers and two, the cutting surgeons. More recently Dr. Donald Effler of Cleveland refers to a certain species as briefcase surgeons. This is a bit facetious. The fact remains, however, the type of surgeon we need and upon whom the future rests must have interests in all aspects of our profession.

Perhaps I'm a little out of bounds in expressing personal views but I suspect that Dr. Hertzler would agree with them (at least in part). To strengthen this opinion I would like to cite the following quote from his writings.

He stated, "Operative treatment is the spectacular part of the doctor's life. Mere technique may require considerable skill obtained only by experience but on the whole it is the function requiring the least mental effort. In fact, I believe a man could become a good operator, with nothing above the medulla and I have seen many who seem to be in precisely that predicament. It is much easier to acquire technical skill than to learn the indications for doing so. This is attested by the fact that many surgeons never advance beyond this manual dexterity."

Returning to the subject of research, some startling differences can be cited between Dr. Hertzler's early endeavors in various investigations and the environments and goals as we have known research during the past 20 or 25 years. Until very recently, when governmental research grants have practically dried up, the name of the game has been money. It is lamentable that the sudden lack of funds has in many institutions crippled or obliterated research laboratories. In the long run, however, there may be beneficial effects. No longer can universities underwrite the teaching staff with research money. Too often these faculty members, although skilled researchers, are not interested in teaching and, therefore, are poor teachers. This is one of the modern medical students valid complaints.

A few weeks ago, Dr. Leo Eloesser, in an address to the American Association for Thoracic Surgeons, emphasized that the majority of major breakthroughs in research have been accomplished by individuals and not by super-financed teams whose multiname publications resemble the roster of a baseball team. One can be reasonably certain that the last name on the list when the work is published did most of the work. Many examples of the contributions of an individual can be cited—Pasteur, Salk, the Graham-Cole test and many others. Dr. Hertzler's works are a prime example of the contributions of an individual without benefit of large financial underwriting.

Certainly team effort and a pooling of knowledge

has its place. For example, a few years ago five university hospitals with established, reliable records and a low rate of wound infection were selected to study and attempt to evaluate the use of ultraviolet lights in the operating room. I am proud to say that our institution was among the five. It was a double-blind experiment and with alternating cases. No one knew, with the exception of one technician, whether or not the light in the ceiling was ultraviolet or just plain light. Cases were alternated and the classifications were clean cases, for example, an uncomplicated hernia; clean-contaminated, that is, cases in which a viscus may be opened and there is a chance of contamination, such as colon resection, appendectomy, lobectomy and so forth. And the final category was the frankly contaminated case, involving such lesions as appendiceal abscess, ruptured viscus and so forth.

The wounds were studied carefully postoperatively and extensive and expert bacteriological studies made. No antibiotics were employed initially. The results were as follows: a slightly higher rate of wound infections in clean cases, with no statistical difference in the clean-contaminated group but in the frankly contaminated cases there was some indication that the ultraviolet light might be detrimental.

The conclusions in this study were that routine ultraviolet lights in the operating room are not justifiable from the standpoint of cost and care, not to mention the elimination of goggles, special gear, eye shades and so forth.

The total cost of this team effort was well over one half of a million dollars. Studies of this nature are truly research by definition, serve a useful purpose and can be accomplished in a relatively short period of time. Whereas, if only one clinic had undertaken this study, it would have taken several years to accumulate reliable data. Moreover, the safety in numbers for five hospitals with closely corresponding results eliminates the criticism that any one institution might be prejudiced one way or the other.

There was no possible risk to the patients involved in the study. In fact, the only casualties were among some of our highly educated faculty who felt certain they could tell whether the lights in the ceiling were truly ultraviolet or just plain light. The result of this belief was a few spectacular cases of arched eyes.

Now let's have a look at Dr. Hertzler's original laboratory of experimental surgery. The legend in his book, *Ventures in Science of the Country Surgeon*, is as follows: "Laboratory of experimental surgery! Size 10 x 12 feet, showing at the right is the dog hospital; plumbing, a bucket and a dipper; heat, radiation from the occupants; sterilizing room, the

family kitchen. In this building my studies in wound healing were conducted for five years."

Imagine displaying this laboratory to a young, erudite scientist and explaining it would be his workshop for the next five years. A dose of smelling salts might be necessary to revive the gentleman who would then make a hasty exit from the vicinity.

Dr. Hertzler published 27 books on a wide variety of subjects and 149 articles in medical literature and an even wider variety of contributions.

One hears today the common complaint from young and sometimes older men "I just don't have enough time to publish." I can think of nothing better than to do research, work in the laboratory, make basic contributions, but there isn't enough time. I have been guilty of this sort of talk, have an excuse, not valid of course, namely the avalanche of committee meetings imposed upon the staffs of hospitals today. I chuckle to think of how Dr. Hertzler might have reacted to the multiple and often meaningless committee meetings. He was once asked, "When will things change in our country?" His reply, "When the people stop praying and go to work." With our changing times this reply might be altered by simply stating "When the people go to work."

Fee splitting was common during Dr. Hertzler's early days of practice. He was bitterly opposed to this financial arrangement between referring physician and surgeon. His answer to the problem was to establish a maximum fee of \$150 which left the fee splitter disinterested in his cases. He also established a fee of \$4 per day for hospitalization. Though impossible today, he did make one of the early attempts to lower the cost of medical care.

It has been a real honor to me to be with you during this day of tribute to Dr. Hertzler. It has been a sentimental journey since my father was a horse and buggy doctor. He knew and admired Dr. Hertzler. My mother was operated upon in your hospital and as a very young boy, I made trips to Halstead with my father. Many of my friends here today, I have known for years. And I am inordinately proud of being a Kansan. I was born in Scottsville, Kansas, but moved to the big city of Salina at age 12. In 1932, I married a Kansas girl, Virginia Layton, so I qualify as a Kansan although I have not lived on the plains for many years.

I can remember, while still living in Scottsville, my father's automobile, a Mitchell with acetylene lights. During a good part of the year the Mitchell was grounded by snow and mud. My father kept horses both for use with the buggy and for horseback visits to the farm people who needed help. One of my jobs was latrine officer for the stables. I can't say I hate horses but I have never really admired them.

In rereading practically all of Dr. Hertzler's writings, I have come to the inevitable conclusion that he was a deeply religious man and I quote from him, "If we do our best throughout life God will give us what we have earned." His unceasing capacity for work made him one of the most brilliant surgeons and scholars of all time.

If you disagree with some of my conclusions, I shall close with another Hertzler quote, "No one it seems trusts the veracity of a Kansan unless it is about tornadoes and dust storms."

VOX DOX

Herewith the JOURNAL establishes a new feature which has been under consideration for some time. The Editorial Board invites readers of the JOURNAL to use this space for communications expressing opinion, complaint, satisfaction, dissatisfaction, suggestions, or whatever.

It has been apparent that one of the strongest desires of the president of the Kansas Medical Society, Francis Collins, is the maximum interest and participation of all members of the Society in its affairs so that its objectives and accomplishments will be a knowledgeable expression of democratic function. The JOURNAL is a logical medium for the promotion of this effort and is pleased to offer a forum for the individual member to speak out.

We are hopeful this will be stimulating and provocative department. Reasonable editing of letters is contemplated as may be required by space limitations and minimal rules of grammar. At this point, we anticipate no restrictions of subject matter other than libel, obscenities of more than four letters (space limitations again), or references to the Editor's ancestry (unless deemed accurate by a consensus of the Board).

Reminiscences

—Dr. Hertzler's Place in Kansas Medicine

EDWARD H. HASHINGER, M.D.,* *La Jolla, California*

TO TALK ON DR. A. E. HERTZLER is a very simple task—a delightful task for me. After 50 years I certainly like to reminisce, and I'm in the reminiscing age. It's sometimes a little difficult to get me stopped reminiscing, but I'll keep tab today on the time.

I first saw Dr. Hertzler when I was an intern at General Hospital in Kansas City, "Gosh! What a homely man." After I knew him for two weeks I never thought of him as other than being a handsome man. Because his personality, his kindness, took away any physical features that somebody might refer to as homely.

I learned pathology from him because I had to. If you worked under him you got pathology. We'd meet with him in the basement of the old hospital building night after night and review the tumors and the tissues that had been removed in the course of that week. Yes, sir, I learned pathology from him and when I went back to the University of Kansas, Dr. Wahl said, "Oh, no. We're going to start you in pathology. You've been with Hertzler." And that's where I started in the university.

I recall some of the things we did here in Halstead, for instance, research for the surgeons. I had to give an anesthetic every now and then because I was on the medical service. I can tell you, I graduated from a very scientific medical school and the instructors didn't believe in telling you anything about how to practice medicine, and they didn't believe in telling you how to give an anesthetic either. They gave 16 lectures on the theory of anesthesia and I was a lousy anesthetist. I recall the first anesthetic I gave for Dr. Hertzler. The patient was as black as your hat throughout the whole procedure and I just a-pouring the ether—that's all we had at that time. When he got through he looked down at me and said, "Well, that's a pretty good anesthetic. She'll wake up next Tuesday."

We had many interesting things happen. I recall once that he really gave me the works. We had a Mexican come up in a special railway car to have an operation. The fee for major surgery was \$100, no more. So, I got in contact with Luke Krehbeil, the hospital administrator, who was the officer of the local

bank also. I said, "Luke, this is terrible. This fellow spends \$5,000 to come up here to get Hertzler to operate on him and we charge him \$100." Luke said, "I think so, too." I said, "Let's make it \$500." We did, and Dr. Hertzler found it out. He really gave me the works. He let me know that he was running his hospital—nobody else. He was tremendously kind to widows, war veterans, any number of people came in here, and he would take that record and scratch out "charge." You never knew how much he really was doing. He not only took care of them in the hospital, he paid the hospital bill himself, didn't charge them for the operation, and furnished them all their medicines free, even if we had to send them by mail thereafter—he paid the postage. No conversation about it. Secret things that he was doing all the time. That big, blustering individual didn't want it to be known.

I recall once in the early period that I was here, an Amish family came in from south of Haven. I don't know whether they still do it, but then they came in big wagons. The whole family came—children, grandchildren, neighbors, I think, sometimes. The whole batch of them would come at one time. So, Dr. Hertzler thought he was going to play a joke on me, because he knew they didn't speak English. But, he also didn't know that I was raised in Lancaster County, Pennsylvania, and I could speak Amish Dutch as well as the Amish, because I played with them as little kids. They came in and I noted by their costume that they were Amish and addressed them as such in their language. Dr. Hertzler stood outside listening to see how I was going to take that history and he was utterly amazed. Thereafter, all year I was here, when the Amish would come in, they would pass Dr. Hertzler in the hall, just like that, and come to my office. I had all the Amish trade in the community and there were a goodly number of the Amish in Haven.

We were here in the dry days of Kansas—it was very dry—alcoholically speaking, and Dr. Hertzler was very opposed to drinking—distinctly opposed to it. But Dr. John McMillan and I were residents and occasionally on Saturday night, if we had an exhausting week and felt we ought to just loosen up a little bit, we had a druggist who made his simple

* Presented at the first annual Arthur E. Hertzler Memorial Lectures, April 25, 1970, Halstead, Kansas.

elixir flavored with orange. We would go out on a Friday or Saturday night, and incidently, Dr. Hertzler operated on Sunday, 7:00 a.m. surgery. After a rather severe night, and usually in the company of a fellow by the name of Masters, we'd be in a little perspiry situation when we were in the operating room working, assisting or giving an anesthetic, and this orange flavor seemed to come out in the first ration. Miss Papanhousen, the head of the operating room noted it, warned us about it, and so forth. Finally, I came up with a program that absolutely solved the situation. John McMillan and I became known as the lovers of the orange and in our coat pocket we always had an orange. When it got a little too old we'd put another one in. We never ate it. Miss Papanhousen helped out by putting a little plate of three or four oranges in the little annex to the operating room. So, if anybody noticed the flavor of orange around, this was the reason for it. Well, that druggist changed the flavor and we didn't like the new flavor of the new simple elixir, so we just took him out behind the building and gave him a talking to—the facts of life—and we went back to the orange again.

Dr. Hertzler was a very great fan of shooting and every intern or resident had to take up pistol shooting. Well, I liked the idea and over under the former nurses' home in the basement he had a shooting range. We would have to spend time practicing there—this was a requirement, and I became rather adept because I liked to do it. In fact, we had the Kansas State Championship and I finished second to Dr. Hertzler. While we were out shooting jackrabbits, as we often would in the dusk of the evening, Jim would bring up the old car and we'd travel in this open car looking for jackrabbits. We had plenty of them out here in those days. We would be going along pretty good. We used rifles and Dr. Hertzler used a pistol and when we'd miss it with a rifle, he would hit it with a pistol. Coming along, and we had started home, when I saw what I thought was a jackrabbit and I aimed and hit it. It jumped straight up in the air—it was a favored cat of the Halsups! Dr. Hertzler, seeing it, said, "Drive on, Jim, drive on!"

In some of his eccentricity, I still recall the day that Dr. Chesky was going to do a circumcision on a little baby. We had an upstairs operating room and a downstairs, and Dr. Hertzler heard about it. His migraine must have been hitting him that day, because he said, "I still do the surgery around here. Schedule that for me." We rescheduled it. Just for meanness, the residents in surgery, Dr. Chesky, Dr. Olson, Dr. McMillan and myself, all scrubbed. All standing around this table when they brought the tiny baby in. Dr. Hertzler came in, gasped, didn't

say a word then, but he did later on. This was Chesky's idea, and he said, "Chesky, you are going to get killed one of these days."

Dr. Hertzler had an amazing, almost mysterious ability in diagnosing. I recall a year or so after I was here we were sitting in the doctors' room at St. Luke's Hospital in Kansas City. There was Dr. Bohan and the customary group to gather in the doctors' room to gossip, while the surgeons did the work. They wheeled a patient by—just went by the door just like that and Dr. Peter G. Bohan said, "That's my patient." Somebody said, "What is it?" "She has cancer of the gallbladder." Dr. Hertzler, said, "Oh, no. No she doesn't." Bohan said, "Well, do you know her, have you seen this patient?" "Never saw her before in my life, but she doesn't have a malignancy. Now, pretty soon you're going to have the opportunity of seeing that I'm right." Well, I drove Dr. Hertzler down to the train shortly thereafter, to come back to Halstead. I said, "Why did you say that?" He said, "I have never seen a woman with cancer put on lipstick or rouge her face when she comes to the doctor for a diagnosis, and that patient had rouge on and a lipstick." The patient had gallstones and no malignancy. I said, "Where did you get that idea?" He said, "Just by seeing people for the last 30 years," was his answer. His keen, tremendous observation.

A farmer's wife was brought in to the hospital. She had been an invalid for two to three months. We couldn't make a diagnosis. We did everything—we couldn't find a thing. Then Dr. Hertzler went in at the last minute to see her and he came out with a story just like that one about the tumor. This farmer's wife worked day and night for seven days a week, year in and year out, never had a vacation. They had a family of six or eight and she'd raised them, and they had all left and she was still there, doing the drudgery. Dr. Hertzler arrived at her treatment. His treatment was that he had flowers sent to her room. When he saw her the next morning she was propped up in bed. She was smiling. This was approximately the first bit of attention she had received. She wanted attention from her husband, and he never intended to ignore her—wouldn't think of anything like that. But, being a farmer in those days, 640 acres to take care of; children were all moved and gone. So when the husband came in and saw those flowers she thanked him for them, and he was amazed. Finally, he went to Dr. Hertzler. "Where did they come from?" Dr. Hertzler, quoting this to me, said, "Sit down. I'm going to tell you how we are going to cure your wife." He told the story, and said, "Now, I want you to get somebody in on that farm and you just take a two months' trip

around the world. At least two months away from home where your wife will have nothing to do but relax and have a good time." The husband said, "I'll do that—I'll do it." He was extremely sorry and the thought that possibly he was the cause of the invalidism hurt him. She came back just as happy and everything was fine, her paralysis had disappeared and she was in absolutely marvelous shape. And, I followed this for years and he was very attentive and very happy until death came to one of them. This is an observation that Dr. Hertzler had made, just in a few minutes. I had been in there for an hour taking the history and didn't catch it at all.

I had an infant, a small baby, and "I'll be darned if I knew what"—fever, crying—you couldn't touch the baby—it just started crying and we had a heck of a time. We brought the baby into the hospital because I couldn't handle it outside and he said to me, "Who did you say that was?" I told him. "Oh!" he says, "Forget it! That's a Sears Roebuck baby. You give it potassium iodine." I had told him that each time I picked the baby up he started crying. Well, you can call this a Hertzler syndrome. When you do that there is something wrong in the skeletal system of that individual and one of the common things then was lues and that, of course, was what the baby had. It was adopted and they adopted in those days without much preliminary examination.

Another incident: We had a patient sent in from out in Western Colorado for a tumor of the abdomen and the resident in surgery was pretty busy and didn't have a chance to check the patient very carefully and scheduled him for abdominal surgery in the morning. Hertzler went in for just about a minute and looked, as he did, and he came down and said, "Hash, go up there in room so and so and take a history of that patient and examine him." I did, and I was surprised at what I found. I left and went into the laboratory and got a catheter and took care of the tumor in about five minutes time. The patient got up the next day and walked home, but I did a spinal puncture Colloidal Gold test and found out he had a bit of touch of tabes. Doing little things like that, I got in the good graces of Dr. Hertzler, very definitely so. We had a daily routine. The daily routine was that Dr. Hertzler would start ward rounds at six o'clock in the morning and at seven or eight o'clock he would start operating. Between cases he would go downstairs to the clinic and see patients, and Vic Chesky would sew up the surgical patients. He kept that up until as late as three or four o'clock in the afternoon. I have seen him do six goiter cases in one day, among other things that he was operating. Then, when he was finished with that he would, as I said,

drive out for half an hour and come back. He would go back into his study and start pecking on the typewriter . . . old Smith-Premier typewriter—one section for caps and the other for lower letters, and write another chapter of his book. Always a book was in the offing—always. And, maybe at eleven o'clock at night he would still be working. We'd try to drive him home, force him to go home to the crowded corner across the street. "Boys," he said, "I've got a headache. I got to work. I can't sleep anyhow." Actually, his day's work was an 18 hour day and he'd say, "You know one thing—you don't have to sleep, you just have to be horizontal and at peace with the world and you'll get all the rest you need. Never fight to sleep."

After my year here, I went to Kansas City; Dr. Hertzler was my roommate. He would come there at that time, would only come for two days for operations. Larry Angle was his assistant and Larry would get the patient lined up at St. Luke's Hospital and Dr. Hertzler would go in to operate. I recall once when I was there I was in the operating room, and why I was I don't know, I always avoided operating rooms. The nurse in charge had just come fresh from Johns Hopkins School of Nursing. She said, "Dr. Hertzler, where are your instruments?" So, he handed her four or five instruments. He was going to do an appendectomy. She looked at me. He said, "That's all you need. The trouble with these young surgeons, they drop half their instruments on the floor. I don't drop them." As he was always an interesting person, the nurses adored him, anybody that knew him adored him. The students adored him. He taught them surgical pathology and on the day he was supposed to give the final quiz he made it coincide with the baseball game. He took the entire class to the game instead of giving them a quiz. He said, "Giving them a quiz isn't going to improve their knowledge one bit."

As a public speaker he was not too good. He would never write down what he was going to say and he'd get around the subject and sometimes would say some things that were a little flippant, but what he wrote was excellent English, to the point and never verbose; he was a tremendously fine writer. Sometimes he would get in trouble when he was making a speech. Well, that was nothing too unusual. We still do that today, some of us. Well, 50 years ago doesn't seem long to me. It seems just as clear in my mind today as it did then. I've always had a tremendous affection for him because I knew of many things in his favor. He was the greatest doctor I ever knew and better than that, a true friend.

Medicine

—Its Future in Kansas

GEORGE A. WOLF, JR., M.D.,* *Burlington, Vermont*

I MUST ADMIT it gave me a turn, knowing that I was the speaker tonight, when Mr. Coe opened the exercises by saying that now we're going to have some fun and nonsense. I was scared for quite a while there. I was going to tell you about our leaving for Vermont, and I thought I might describe back east in the New England area in Kansas terms. For example, we have wheat, but in Vermont it comes in sacks, is white, and is called flour. We also have beef cattle, but the beef cattle in Vermont is "old Bessie," after she has dried up; and finally, most of our oil comes from whales.

It is sort of interesting to me that my last official act in Kansas will be speaking to this group, which I find to be a pleasure. We have had a very pleasant day today.

I read the *Horse and Buggy Doctor* a long time ago. I didn't look at the book again until a few days ago, when I knew I would have the opportunity to speak to you. But, I could still remember the humor, the devotion to helping people, devotion to human problem-solving, and the empathy that Dr. Hertzler exhibited and described in his book, and the pleasure that he derived from his work. I think that his library, the books that he wrote, and his clinic which have lived after him, make him a very unusual person indeed.

All speech writers try to look for words that might say it, so I looked in the dictionary and came across words like "scholar," "school man," "erudite." In reading the definition, it was apparent that "scholar" implied being in school or university. Although Dr. Hertzler had an appointment at the University, it was perfectly obvious that the physical location of the scholar was not particularly important, so scholar didn't seem like a good word. Then, I thought of "school man," which I found in the dictionary to be a commitment to one school of thought or another, and it seemed to be quite clear that this hardly befit a good doctor. The word "erudite" surprised me because it suggested that one has departed from a crude state, which is admirable, but hardly a posi-

tive statement to be made about men. So, I was left with the adjective "learned," with the accent on the "ed" and somehow this sounded affected for Dr. Hertzler. Then, suddenly it occurred to me that with all of these words maybe all I needed was a verb and not an adjective, because Dr. Hertzler was an active person and a doer, so maybe my greatest compliment to our honoree tonight would be to say "he learned all his life."

I have been asked to speak to you about the future of medicine in Kansas. Dr. Hertzler, if I read his book correctly, probably would not have accepted the task in the first place, and in the second place, if he had come up on the stage as I have now he would have said, "I don't know," and walked away. But that would be impolite after such a nice day and such a nice dinner, so I think I should at least throw out some ideas for your thought, consideration and possible rebuttal at a later date. Some of what I am going to say is gossip on the national scene. Nevertheless, it might be worthwhile for us to think about some of these things briefly.

Probably the one important thing that stands out very clearly tonight, and has today and in the history of the Hertzler Clinic, is that practice involving an association of physicians and others is certainly important in the future—in other words, the group practice idea. Too many times I think we have a kind of stereotyped image of what the group practice is. We think of groups that we have known. We think of groups of doctors who have dominated medical scenes in the area. We think of groups of doctors who are impersonal and not really concerned with their individual patient's welfare. So, sometimes group practice is a kind of bad word to some people. But, actually, when one considers the terms of the association of physicians of various specialties, generalists and other health professionals, combined in attempting to improve the health services to a region, this is probably the way medicine will be practiced in the future. This is what the Hertzler Clinic has been doing for a number of years because of Dr. Hertzler's foresight.

Now, another element that is being talked about a great deal lately is this business of quality of care. How do we tell what the quality of care

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is and how do we make sure that the patient gets quality care? In our economic system we have the word "audit" with which we are all familiar. The bad part of an audit is when the income tax fellow comes around, but most of the time auditing is an accepted procedure; that is, having someone look over our shoulder and help us decide whether we are doing a good job. This is being done in the medical profession. I think the medical profession, in many ways, has taken the leadership in developing the concept of medical audit. All of you are familiar with tissue committees, the old, familiar CPCs, and grand rounds, where we tease each other and sometime annoy each other. Really, what we are doing in these exercises is conducting a medical audit. The point that I would like to make about the medical audit is that it is rightfully the responsibility of the profession and should remain the responsibility of the profession. The techniques should be expanded, perfected, and adapted to the needs of patients. We, as physicians, should take the leadership in developing these techniques. Obviously they can work more effectively when a group of colleagues are assembled together, such as in a hospital or in a group practice as you have in this town. But, it is evident that with the current public feeling the way it is, the more that we develop the techniques of audit, and indeed, the more we talk about what we have done in this regard, the more important it will be in the future. Like many of you, I didn't have the opportunity—I'm not sure that I should call it an opportunity—to see the TV show by CBS last week.* Such reports have got to stop and one of the ways we can stop them is by indicating that we, indeed, are concerned about the welfare of our patients.

Another word that appears on the scene more and more these days is "relicensure." This word offends me a little bit, because I am not convinced that the technique of licensure is really up-to-date. It was something that was introduced 50 or more years ago and designed to protect the public. But licensure activities, for the most part, are fragmented. They are a state function and they are so broad as to be not very effective. Of course, you get your license and then you go on and get yourself qualified. For example, I'm a fully qualified, licensed physician and surgeon in four states—and I cut myself shaving. But, the thing I'm trying to emphasize is that what we are really talking about is the evaluating or updating of our professional quality. This is a continuing process.

This isn't something you do every few years. It's something that should be done all of the time. Most of us have to do this to actually practice medicine, but there are ways which the profession can, in its various forms, assemble and pursue this kind of thing. We can help ourselves. For example, the American Academy of General Practice, as all of you know, has certain requirements for membership which imply continuing evaluation via education. About two years ago, the American College of Physicians developed a self-evaluation examination. As you go to medical meetings these days you find somebody sitting in a corner with a computer, and you can step behind the curtain and touch the button and find out how smart or dumb you are. But, these things are extremely important. It seems to me that in the future we, ourselves, can conduct an evaluation of what we know and what we need to know. Of course, the important thing is not what you know, but really what you need to know to take adequate care of your patients. This, in a sense, is a change of philosophy for those of us (particularly my generation) who have gone through medical school and training when the concept was that if you went to a good school and trained under a good doctor, you would be a good doctor forever. Obviously, this isn't true. So, what we have to think about is how we can upgrade ourselves, in finding out what we do need to know to take good care of our patients.

Another element that I have talked about a lot is the matter of mobilization and sharing of health care resources. Obviously, the resources for the care of the patient are no longer with the individual physician. They include not only the individual physician, but his colleagues, his specialty confreres, nurses and other allied health professional people, the hospital resources, and so on. These have to be thought of in terms of their cost and of their availability and of the patient's needs. This means that all of us as professionals must give serious consideration to how we can mobilize and share resources for a given region . . . not for the town. The old idea that we have two hospitals in town and they compete with each other has gone by the board, I think. We have been called a "cottage industry"—you've all heard that, and of course, that doesn't make much sense. Nevertheless, if cottage industry means that we are competing with each other in the sense of vying with each other for status and for "I've got a better thing than you have," this is no longer an important part of medicine. We must make it part of our professional responsibility to identify and mobilize these resources. About 10 years ago a study about a big

* Dr. Wolf refers to the CBS News documentary "The Promise and the Practice," April 21, 1970.

city was done by a sociologist. Everybody kept the whole thing secret as to who the people were and what city it was. The report pointed out that a very competent, prominent businessman had moved into the city and decided that the hospital of which he had been asked to be a member of the board was going to be the best hospital in town. So, he went to all the doctors on the staff and asked, "what do you need to make this the best hospital in town?" They all told him, but the one thing they didn't tell him was that most of the things they needed already existed in the hospital down the street. As a result of this, a great deal of community money was poured into an operation which was really a duplication, and which was not needed by this community. Now, it's easy for us with our professional know-how to delude lay people into believing this kind of thing—that something is needed. I submit that it is our professional responsibility to make sure that it is needed for the welfare of the patients in a given region, not just to make our hospital look a little shinier than the one next door.

Another element that we have to think a great deal about is the matter of financing health care, and I think that what I have just said about the mobilization and sharing of resources relates very much to the financing of health care. We, as professional people, have to look at the economics of the delivery of health services. We are not private individual onlookers any longer. We are professionals with responsibilities for delivering health care to people at reasonable cost. This doesn't mean that we have to be economists, but this means that we have to look at the cost of health care in terms of society and not in terms of ourselves or our single town or institution. One of the words that I think we should get clear in our heads is the word "universal." Everywhere we turn we hear about universal health insurance. I share with you the shudder that passes over my old bones every once in a while when I equate "universal" with "federal," but these two words do not mean the same thing. Universal provisions for the care of patients is quite different from federally subsidized or federally supported or federally directed practice of medicine. Let's not lose the advantages of some kind of universal health insurance in our fear of some kind of federal control in the practice of medicine. Now, what do I mean by control? I mean that in national defense, for example, the federal government stands by with an army, and if we get into trouble we can't handle locally, it steps in and tries to help us protect ourselves. I think the same kind of philoso-

phy can go into the practice of medicine. There is no reason why we can't provide for a given region a program, be it prepaid or indemnity type, which is suitable to that particular region, to provide the services which the group thinks it needs and to provide at a cost which it thinks the people can take care of. On the other hand, the federal government can step into the picture in a kind of co-insurance concept; that is, make the provisions for catastrophic illness which is beyond the resources of a given individual, a given community, or given region to deal with. This is basically the same philosophy as the federal support of the armed forces. To me, it makes some sense—the federal government co-insuring for these catastrophic events, but the local region dealing with its own problems in its own way seems to me also to make sense. This makes the matter of "control" more reasonable.

Still another area that we are concerned with and hear a lot about is the matter of new health professions. All of you, in your medical journals and newspapers, read about the Medex program in the state of Washington; well-baby nurses program in Denver; the Duke program of training physician's assistants. We have a program at KU where we are training nurses to deal with stable, chronic diseases, and there are other programs about the country. The question comes up, "What about all of these new programs?" Well, all of us, I'm sure, agree that there is no place in this country for second rate physicians. I think the concept of a physician should be maintained and that he should be well trained and well qualified to deal with the people. However, there is no reason people cannot be trained to assist a physician. Many of you in your own private offices have done this very well over the years. When you try to think about it at the national level it becomes very complicated and the things that you have been accomplishing in training your own assistants become horrendous in their complexity because they are operating at the national level. There are several aspects to this business, it seems to me. One, that experimentation is very much needed, experimentation done with a meaningful sense so that what is happening can be evaluated. It probably should be done in connection with institutions. The reason that I say this is because I think that everyone who gets into any kind of physician's assistant role should have a well-developed and strong relation to the physician and should be well supervised by the physician. This means several things. It means that the physician himself has to learn to work with these kinds of people. Most of us

have been trained to work as solo operators and it is hard for us to delegate responsibility. Second, and more important in these experiments, is the question of how the public reacts to someone other than the physician getting involved in their health care. There have been a few studies. Dr. Lewis at the Medical Center did a study about the patients' attitudes toward our nurse clinicians and found that the patients were quite clear as to what they thought the nurse clinicians should do and shouldn't do. It may be that patients are in some ways more adaptable to better utilization of assistants for physicians. On the other hand, I still think there needs to be education in communities as to how assistants to physicians may work effectively in extending the arm and eye, if you will, of physicians. It is possible that one could have a group of affiliates in this clinic here, which might be the physicians' assistants who would be stationed in the tiny communities which could not afford a doctor, and yet have these people act as the eyes and ears of the doctors for the small community. You can get pretty fancy about this and talk about two-way television and all of this, if you want to, but I don't think that is really the point. The point is, will the public accept this? Would they by-pass these assistants out of the small communities and come here, or go elsewhere, or would they, indeed, use this new kind of system to get health care? I don't think anybody really knows. The danger is that these assistants will become independent practitioners; in other words—poorly qualified doctors' surrogates, and this is what I fear. It is extremely important to me that as we develop a concept of new health professionals, the medical profession be deeply involved in the experimentation and supervision of these people. The question obviously is, "will there ever be enough physicians to provide individual physician service for every small community in a state like Kansas?" I doubt very much that there will be. It is true that there is a shortage of physicians, but it is also true that there is a shortage of other health workers. So, the answer, I'm sure, is (1) the training of more physicians and well qualified people; (2) the development of allied health professional people and the health profession in general in greater numbers; (3) experimentation with the utilization of new kinds of physicians' assistants.

Then, finally, the matter of priority. It seems to me that we are moving into an era in the health professions when we are going to have to examine priorities. Before 1929, for example, the thing for a young physician in New York City to do was

to get a job in the summer being a physician to a family in Newport. Now, if you can, imagine this kind of thing happening today. The idea of one of you busy people taking your time just to administer the needs of one family is absolutely ridiculous. Another way to say this, and they have been talking about this in England recently, is that maybe we have to think in terms of rationing medical care. This is really what priorities are all about. Physicians working with patients should be thinking about rationing—not the planners, but the guys who really know what patients are thinking and what they expect, and from a strictly medical, statistical standpoint, what they really need. Now, this is not easy, because it is very difficult for the physician to say, "I'm sorry, lady, you don't need my services because you're not sick enough." This is a toughie to handle and many of you develop artificial barriers which help to filter out some of this stuff. Sometimes you have a nasty secretary to help you out with some of this, but this is not the way to do it. I admit that in individual circumstances you have to do something like this, but one that we really need to do in the next few years is to try to find out what the true health needs of the people are in medical terms. You know you don't go into the ghetto and say to the patient, "Well, what do you think you need?" You look at the ghetto in terms of what diseases are there and what the medical aspects of the situation are—not what the social aspects are, and make your medical decision on the basis of scientific medical information. I think that the 1970s are going to be a rough period. There is a great deal of emotion in the air and that TV program last week (April 21) is only a sample of other programs. The thing that is most disturbing to me is that the atmosphere is one of attack. We are being attacked all of the time. We are reasonable people, but when they attack us we're going to defend ourselves, and defense usually means digging in when somebody shoots at you, dig a hole and sit tight most of the time—unless you have a little bigger gun. At the moment, we don't have a bigger gun. I think the more that we become defensive, the more reactionary we become, and the less leadership we take, the more we get pushed around. This is what is going to happen to us during the '70s. I hope we can get together and think in medical, rational terms about the health needs of the population and hope we can have the help and expectations of the population and plan for what we, as physicians, think the future is going to be. It's going to be hard, because we are going to be attacked still more. I don't think there is any question about that. We

are coming under the most criticism in our professional lives just when much that we do is really important and significant and when we can manipulate a lot of things in human biology that we couldn't manipulate before. This is ironic, but if we are real rough, tough professionals; if we are real pros, we can take it, and by taking it I mean not being defensive, not being reactionary, but taking an active, imaginative, and vigorous role in planning for the health care of the future.

TRAVELING ABROAD? COMBINE TRAVELS WITH DR-DR PROGRAM (Doctors for Direct Relief Foundation)

The term "Doctor Doctor" may well become part of popular speech as the Direct Relief Foundation announces the launching of a new project of unusual interest to medical doctors in the U. S. The project, which began June 1, asks doctors going abroad to combine their travels with visits to overseas hospitals, including fascinating trips to bush areas and remote jungle clinics.

Actually, states Dennis G. Karzag, executive secretary of the non-profit medical aid organization, the name of the new project is Doctors for Direct Relief Foundation Program. The code initials are DR-DR, with the result that staff members have dubbed it "Doctor Doctor" for short. It will assist the foundation's Medical Relief International, an organization which has shipped almost \$38,000,000 worth of contributed pharmaceuticals to patients in 80 needy countries during the past five years. An estimated 75,000,000 persons have received help.

Doctors who elect to assist Direct Relief will be asked to visit overseas hospitals and clinics which have already received DR aid, or have requested it. Geographical areas of particular interest are Central and South America, the Far East, Southeast Asia, and Africa. Doctors who contemplate touring these areas are requested to contact DR for credentials and a medical itinerary showing the installations to be visited.

The visit of a Doctor Doctor will include an on-the-spot evaluation of the services offered by a hospital, its probable future needs, and suggestions on how to improve DR's services to meet its problems.

For the doctor who is a photography and gadgetry fan, the trips should be especially interesting. The foundation requests (when possible) photos, movie films and color slides, as well as tape recordings.

These pictures and recordings will supplement written reports made by the doctors upon return.

"Just the facts, doc," states an organizational guide-line, indicating that Pulitzer Prize prose is not required. For the extra-busy doctor, an extraordinary concession is offered—that of accepting reports in a doctor's written longhand.

Inducements to serve include full access to far-away hospitals, armed with DR credentials, which will provide contacts with medical personnel from many lands. Certain tax deductions for expenditures incurred in charitable work are available, including travel, lodging, and other expenses.

Wives are welcome to accompany their doctor husbands to any of the areas served, and they will find stimulating travel opportunities far off the ordinary tourist routes.

Any doctor who wishes complete details on how to become a "Doctor Doctor" should write to Direct Relief Foundation, 27 East Canon Perdido Street, Santa Barbara, California 93101.

NEW FILM CONTRASTS ENDOSCOPIC TECHNIQUES IN GYNECOLOGY

A new film available from Wyeth Laboratories, "Endoscopic Techniques in Gynecology and Infertility," outlines the use of culdoscopy and laparoscopy procedures in diagnosing and treating gynecological conditions.

In the film, the applications of culdoscopy and laparoscopy are contrasted and demonstrated in detail, using case-study narrations to explain the photographic sequences made through the scope. These unusual scenes provide excellent aids to augment discussion of these two procedures.

"Endoscopic Techniques in Gynecology and Infertility" was filmed under the supervision of Maxwell Roland, M.D., Department of Obstetrics and Gynecology, Booth Memorial Hospital, Flushing, New York, and Kurt Semm, M.D., University of Munich, Germany.

The film is recommended for showing to gynecologists and obstetricians, general practitioners, and ob-gyn residents and interns.

"Endoscopic Techniques" is available through Wyeth sales representatives for showing to physicians in private practice and hospitals and at medical society meetings. The film runs 27 minutes, is 16-mm., full color with optional sound, one reel. Prints can also be obtained on loan from the Wyeth Film Library, Box 8299, Philadelphia, Pennsylvania 19101.



Marihuana

A Review of Clinical Psychopharmacologic Aspects

ROBERT A. CATANIA,* *Kansas City, Kansas*

MARIHUANA has become one of societies most pressing issues—one which has stirred considerable controversy and aroused violent emotions both from its supporters and its detractors. It is also an issue that has become "tied in the public and legislative mind to the alienation of a generation, opposition to domestic and international policies, and outbreaks of violent dissent."

Yet, although it has been used by man in one form or another since the beginning of recorded history, comparatively little has been written about marihuana, few hard facts are available and little valid scientific research has been done. Indeed, Weil, in the introduction to his paper on the psychological effects of marihuana in man, could only find three similar studies in the American literature prior to 1968. Although there have been several studies outside the United States on the effects of marihuana, these have been scientifically deficient and for the most part limited to anecdotal and sociologic approaches.

The reasons for this (until recent) neglect are many. In the first place, marihuana was a drug little used in the U. S. until the 1920's and for the most

part, its use remained confined to lower socio-economic and Bohemian groups until the 1950's. Secondly, this drug has so far had little or no significant therapeutic application and hence had evoked little scientific interest. Thirdly, until recently most scientific experiments with marihuana were hampered by the lack of a pure extract. Experiments had to be conducted with crude and unstable plant preparations which contained unknown constituents. Finally, since the major effects of the drug are subjective, this leaves the experimenter little to measure and observe, and largely unable to profit from animal experimentation.

It is encouraging to find that the literature on marihuana in the last few years has been increasing and, although many studies leave much to be desired methodologically, they nonetheless add to our total knowledge of this drug. The attempts of this paper, then, will be to summarize and present what is known of this most interesting drug.

The earliest recorded history of marihuana usage was that found in the herbal of the Chinese Emperor Shen Nung, dated 2737 B. C. Its use as an intoxicant gradually spread from China to India to North Africa and from there to Europe. The drug has been used for centuries in South and Central America but was virtually unknown in the U. S. until the 1920's. It was popular in the 19th century in the Western world for such ailments as coughing, fatigue, rheu-

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matism, asthma, delirium tremens, migraine headaches and painful menstruation, and it remained in the U. S. Pharmacopoeia until 1937. The principal use of marihuana, however, has been for its euphoric effects. Indeed the very word itself, marihuana, is said to be a corruption of the Portuguese word *mariguango*, which means intoxicant.

Marihuana is obtained from the *Cannabis* plant, a tall annual weed which has long been used as a source of fiber. *Cannabis* grows readily in most warm or temperate climates, sometimes reaching a height of 15 feet. It is a dioecious plant with the drug being found almost exclusively in the resin which covers the female flower parts. When ripe the resin gives a minty fragrance and appears as a sticky golden yellow substance present on the flower clusters and top leaves of the female. Although probably insignificant, other parts of the female, and the male plant as well, may also contain small amounts of active substances.

Three species of *Cannabis* have been isolated—*C. sativa*, *C. indica*, and *C. americana*. These are all forms of the same plant (family Cannabinaceae, genus *Cannabis*) and differ from each other primarily in the quality and potency of the resin they produce. Those plants growing in hotter climates are usually several times more potent (with regard to their ability to produce euphoria) than those grown in the temperate zones. *C. sativa*, the common species in Asian countries, is approximately seven times as potent as *C. americana*, the common variety seen in the U. S.

Preparations of the drug come in three different grades, identified by Indian names. "Bhang," the cheapest and least potent, is made from the cut tops of uncultivated plants and has a low resin content. Most of the marihuana smoked in the U. S. is of this grade. "Ganga" is prepared by harvesting the tops from very carefully selected and cultivated plants, and it has a higher quality and quantity of resin. When ganga is incorporated into sweatmeats it is called "magum." "Charas" or "hashish" is made directly from the resin itself. It is approximately five to eight times stronger than the most potent marihuana available in the U. S. Hashish is usually purchased as a small, almost odorless material which is gently heated and rolled into cigarettes. It is infrequently made into candy, sniffed in powder form, mixed with honey, water, or alcohol for drinking, or mixed with butter to spread on bread.

The term "marihuana," as it is used in Britain and the U. S., refers almost exclusively to preparations of the leaves and flowering tops of the *Cannabis* plant (probably a mixture of both male and female plants in most cases). This mixture can be blended with water or milk, and drunk, but most

often is dried, sometimes mixed with tobacco, and smoked in cigarettes. Rarely it is taken by intravenous injection.

Cigarettes containing marihuana are referred to as joints, sticks, reefers, weed, grass, pot, muggles, mooters, greeters, Indian hay, loco-weed, gates, mu, giggle-smoke, Griffo, Mohasky and Mary Jane. The cigarettes are usually smoked to a "butt" because the active ingredients concentrate there during smoking. Maximum effect is obtained with deep inhalation and retention of the smoke as long as possible. The onset of action is usually within minutes with the effects lasting for two to three hours.

The chemistry of the *Cannabis* drugs is complex and not yet completely understood. However, in the last three to four years great strides have been made. Among the 80 derivatives thus far isolated from the resin of *C. sativa* are the compounds, cannabiol, cannabidiol, cannabidiolic acid, tetrahydro-cannabiol-carboxylic acid, cannabigerol, cannabichromene, and a mixture of stereoisomers known collectively as tetrahydrocannabinols. Some of the tetrahydrocannabinol mixtures show considerable variation in their pharmacologic activity but most exhibit euphoric activity of varying degrees. Recently one of the isomers of tetrahydrocannabinol, called delta-1-tetrahydrocannabinol, has been synthesized and is believed to be the primary active component of marihuana.

Like the tetrahydrocannabinols, cannabichromene is said to have euphoric activity. Cannabiol and cannabidiol are inactive. Cannabigerol and cannabidiolic acid are sedative principles, and cannabidiolic acid is a potent antimicrobial agent.

Much of the variation in chemical composition and biological activity of *C. sativa* results from the fact that some of the constituents are unstable and change form. It has been explained that, on aging, cannabidiolic acid (inactive) is gradually converted to cannabidiol (inactive), then to tetrahydrocannabinols (active) and finally to cannabiol (inactive). These biological conversions proceed at a more rapid rate in tropical areas than in temperate zones. As a result, samples of varying age give rise to different biological effects in humans. As mentioned above, ecological and geographical factors are also important since more potent resin is produced in plants growing in hot climates than in temperate zones.

As a drug (with regard to its relative lethality) *Cannabis* is not particularly toxic. Lethal doses have been described in cats but huge doses have been given to dogs without causing death and no fatalities have ever been reported in man. Recently, however, there has appeared in the literature reports of severe reactions and one reported fatality when marihuana was administered by intravenous injection. At

the present time this is an uncommon method of ingestion.

There seems to be general agreement as to the short term physical and physiologic effects of marihuana. An increase in the pulse rate is almost always observed. The blood pressure may vary slightly. There is a marked increase in appetite and thirst. Blood-shot conjunctivae are often seen and occasionally a slight mydriasis. There is often urinary frequency without diuresis. With larger doses, nausea, vomiting, and diarrhea or constipation may be seen. Although uncommon, there may be a "hangover" after taking the drug which is easily remedied by aspirin.

The physical and physiologic effects of long term usage are not known. There have been no long term physical effects yet demonstrated in this country. Friedman and Rockmore studied 310 users who had an average history of Cannabis use for 7.1 years and yet showed no evidence of mental or physical deterioration. Chronic users in Eastern countries (who generally consume more potent preparations which are characteristically several times the amount generally used in this country) report conjunctivitis as the most common chronic ailment. Chronic bronchitis, various digestive ailments, and sleep difficulties have also been reported. Kew *et al.* demonstrated mild liver dysfunction in 8 of 12 chronic smokers and raised the question of possible long term hepatotoxicity.

Whether marihuana affects pregnancy is likewise unknown. Persaud and Ellington have found that extracts of Cannabis injected intraperitoneally—an unlikely route of administration by most users—have caused fetal malformations in experimental animals. They point out, however, that such remedies as insulin, penicillin, streptomycin, cortisone and aspirin have similar effects. Martin cultured human leucocytes with tetrahydrocannabinol and found no evidence of increased gaps or breaks in the chromosomes and no evidence of other structural changes.

The evaluation of the psychic, psychological and adverse effects of marihuana presents special problems to the investigator and these should be borne in mind when interpreting the various studies.

One of the problems is that marihuana is a drug whose most socially important effects, and those which experimenters are attempting to measure, are primarily subjective. Measurement of psychological function does not tell us what the drug is like; nor are the users always (or even usually) accurate historians, as, because of biases, some may single out those effects that are desirable or pleasurable, while others may not even be aware of many drug effects even though these are obvious to the experimenter.

Then, too, the effects of the drug are often experienced quite differently by different people and in different environments.

It is also difficult to compare studies of users of marihuana in the Far East (where preparations are several times more potent and use more frequent) with the regular and irregular users of marihuana in this country. In fact, bhang, the Indian equivalent of U. S. marihuana, is scorned by most Indians and not even considered to fall within the definition of Cannabis by Indian authorities.

Further difficulties arise when one attempts to measure adverse effects. For proper evaluation of adverse drug effects, information is required as to the number of untoward reactions, the size of the population using the drug, the dosage and the nature of the population. Also a more uniform definition of "adverse reaction" is needed. At present there is no accurate or even reasonably accurate way of determining how many acute difficulties occur during or immediately after marihuana use. Indeed, most of these reactions probably do not come to medical attention.

Despite these difficulties it is hoped that the use of a single pure extract coupled with increasing experimentation will solve some of these problems. Suffice it to say now that although the methodology of most of the present studies is deficient, several do add to the totality of our knowledge about the drug.

The usual psychologic actions of marihuana were summarized by Bouquet as euphoria, a feeling of well-being, an increase in self-confidence, and a decrease of self-criticism. As mentioned above the effects are partly dependent on the setting—a conducive setting being more likely to produce tranquility, apathy or euphoria. Less commonly, fear, aggression and hilarity are noticed. With increasing doses, changes in mood are followed by changes in perception (particularly that of time). Illusions, visual and auditory, hallucinations and increased sensitivity to sound occur. It is contended that colors seem brighter and works of art are often enhanced to the viewer who previously had little or no understanding of them. Subjective sensations may include feelings of rightness, heaviness or pressure in the head, dryness of the mouth, and a "floating sensation."

Psychological studies on marihuana to the present have been scanty. An extensive investigation was launched in New York in 1939 by a committee appointed by Mayor Fiorello LaGuardia to help determine the extent of marihuana use and its effects on man. Psychological and psychomotor testing was performed on 36 marihuana users and 18 non-users who were allowed to smoke 2-5 ccs. of "marihuana

concentrate." It was found that even in the larger doses marihuana did not affect performances on tests of speed of tapping or quickness of response to simple stimuli, nor did it affect hearing acuity, musical ability or the ability to judge short time periods or short distances accurately. Steadiness of the hand and body and reaction time for complex stimuli were adversely affected by both small and larger doses. Other conclusions reached by the committee were that marihuana per se did not produce aggressive or criminal behavior, or sexual excesses; that there was no evidence of physical or mental deterioration in chronic users and that there was no evidence of addiction. Although the investigation was comprehensive and the conclusions drawn seemed warranted from the data, some of the major criticisms have been that the studies were not double blind, that no placebos were given for comparison, that there was little statistical analysis of the results, and that some of the conclusions drawn did not sufficiently take cognizance of the subjects (prison inmates) and the setting in which the drug was consumed (a hospital ward).

Weil's group more recently tested non-users and chronic users. Both low and high doses (0.5 gm. and 2.0 gm. of 0.9 per cent tetrahydrocannabinol) had no effect on ability of the subjects to maintain sustained attention. In cognitive functioning and in muscular coordination the non-users showed some impairment during the high dosage but experienced users showed no significant impairment and in fact a few showed improved performances.

Early speculation that marihuana is an addicting drug has not been substantiated. There are no well-documented withdrawal symptoms upon stopping the drug nor is tolerance built up while on the drug. Habituation to marihuana is not as strong as to alcohol or tobacco.

There is also no evidence that marihuana leads to the use of hard narcotics. It is felt that it is the personality of the user rather than the properties of the drug which is more likely to cause progression to other drugs.

There appears to be no evidence to support any relationship between marihuana and major crime. There apparently is some validity to the claim that professional criminals sometimes use marihuana as a means of fortifying themselves in their criminal operations. However, other drugs such as alcohol, amphetamines and barbiturates are equally popular for this purpose. One recent study of drug use among juveniles reported that those who were most delinquent preferred alcohol, whereas the "pot-head" tended to be non-aggressive and stayed away from trouble.

The question arises whether marihuana leads to personality breakdown. It seems that regular marihuana use may contribute to the development of a more passive, inward turning, amotivational personality. Nonetheless it is difficult to separate social factors, use of other drugs, prior serious conflicts, and depression from marihuana as the causal agent.

Perhaps the most serious charge, and the most debated, is that Cannabis may lead to psychosis or at least to personality disorders. There have been several reports in the literature of an acute anxiety state with paranoid thoughts or even a temporary psychosis developing in a susceptible person after smoking marihuana.

Keeler reports on 11 individuals who had adverse reactions associated with smoking marihuana. None of the individuals had previously used any other hallucinogenic drug. Of Keeler's subjects, one manifested panic and fear; one depersonalization; one gross confusion and disorientation; two reported depressions; and four paranoid phenomena during the drug reaction. Two others felt anxiety about impending disaster.

Martin reported recently of a case where a 21-year-old student with no history of emotional illness suffered an acute anxiety reaction (after 70 to 80 "smoke-ins") which he continued to experience six to seven months after the initial reaction (and after stopping marihuana).

Talbott and associates report 12 cases of acute marihuana psychosis among soldiers in Viet Nam. Only two patients had a significant prior psychiatric history of emotional problems. In all cases it was the patient's first exposure to marihuana and in each case marked physical symptoms (burning and irritation of the respiratory tract, conjunctivitis, impaired coordination, and vague aches in the extremities) appeared soon after the subjects began to smoke. Impaired cognitive function was present in each soldier and there was lability of affect and marked anxiety and fearfulness. Ten of the 12 showed paranoid symptoms.

McGloughlin reports panic reactions as "not uncommon" among inexperienced users and such reactions occasionally developed into a psychotic episode. These rarely lasted more than a day or two and they did not usually require hospitalization. He concluded that the danger of prolonged psychosis was small.

Ungerleider and associates, in a survey of psychiatrists, psychiatric residents, internists, general practitioners and psychologists in the Los Angeles county area found that 1,887 marihuana reactions were reported for an 18 month period (by adverse

reaction was meant a drug-induced state which led individuals to seek help).

Keeler, in another article, describes four cases where users, none of whom had ever used hallucinogenic drugs before, experienced unusual visual or somatic sensations previously experienced only while smoking. These occurrences precipitated such severe anxiety in two individuals that emergency psychiatric therapy was needed.

Most authorities agree that short term psychosis can be produced by marihuana. That it can produce long term and permanent psychosis is less certain. Benabub estimates that the number of marihuana smokers suffering from all types of psychosis is not more than 5 per 1,000. This rate, however, is lower than the estimated total incidence of all psychosis in populations of that country (Morocco).

At present little attention has been given to possible therapeutic use of marihuana. Chemically, tetrahydrocannabinol is different from any other known class of compounds. Unlike most compounds derived from plant extracts and active in the central nervous system, tetrahydrocannabinol contains no ni-

trogen. Although the mode of its action is unknown, it exhibits a mixture of both stimulatory and depressant activity on the central nervous system.

Finally one should look at the "benefits" of marihuana. Users state that "it is a source of positive pleasure, that it enhances creativity, that it provides insight, and that it enriches their lives." Keeler reports that of the 11 patients suffering "adverse reactions," nine considered the benefits to far outweigh the unfortunate aspects and planned to continue using the drug.

It is evident from the above that far too little is known about marihuana. In the absence of more and better information, it can only be said that "most persons who use marihuana in moderation for a time are unlikely to suffer any lasting effects." Undesirable side effects, both physical and psychological, may occur depending on the potency of the mixture, the frequency and the manner of use, the personality of the user, and the sociocultural and psychological context in which it is taken.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 1300 Topeka Avenue, Topeka, Kansas 66612.

STATEMENTS BY ACP ON HEALTH CARE ISSUES

The American College of Physicians (ACP) is urging its 16,000 members in communities throughout the country to exert local leadership in eliminating duplication of equipment, services and personnel among private, voluntary and public hospitals.

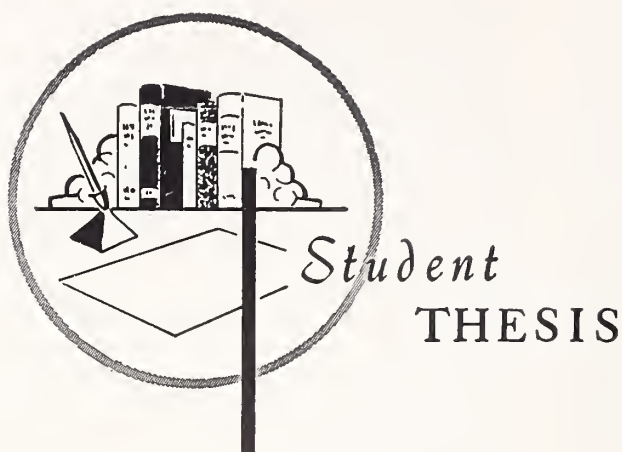
The College's Board of Regents sees this duplication as one of the reasons for the rising costs of medical care in the United States, costs which "must be controlled" by halting competitive planning among voluntary hospitals, private hospitals and such government hospitals as those operated by the Veterans Administration and the Armed Forces.

In a second statement, the ACP Board labeled federal support of medical school teaching programs "erratic, sporadic and inadequate" and called for the alleviation of the "urgent manpower crisis . . . as quickly as possible to improve the availability and quality of medical services."

The ACP Regents not only recommends "increased, sustained and better planned" direct support of teaching programs, but also expanded support of research programs and continued reimbursement of teaching physicians for services they provide to patients.

The presence of research programs help the medical schools to recruit more and better teachers, the College statement explains, "because researchers working in medical schools contribute substantially to the teaching of medical students and make it possible to increase the number of students and the quality of their education."

Edward C. Rosenow, Jr., M.D., Philadelphia, Pennsylvania, executive director of the American College of Physicians, said the Board statements were issued to fulfill one of the major objectives of the medical specialty society—to maintain the "efficiency" of the internal medicine "in relation to public welfare."



The Intrauterine Contraceptive Device and Uterine Perforation

HERBERT C. HODES, M.D.,* *Kansas City, Kansas*

IN THE LAST DECADE the intrauterine contraceptive device, or "IUD," has emerged as a highly effective tool for population control and family planning. Estimates vary, but at this writing well over one and one-half million women are wearing such devices. Unfortunately, many physicians question the value and safety of this method of contraception. The purpose of this paper will be to demonstrate the effectiveness of the IUD, and to point out some of the side effects of its use.

Background

Hippocrates wrote of the use of intrauterine suppositories, including stones, for contraception; and Arabian camel drivers still insert smooth round stones into the uteri of their pack camels to prevent pregnancy on long desert trips.

In the 1880's, intrauterine pessaries were widely used not only for contraception, but also for the treatment of dysmenorrhea and uterine displacements. There were many serious infections following the use of these bulky devices and they fell into disrepute. In the 1920's, Graefenberg developed the totally intrauterine ring of silkworm gut and gold wire, and the modern era of the intrauterine contraceptive devices had begun.

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Hodes is now a resident in Obstetrics and Gynecology at the University of Kansas Medical Center.

Types of Intrauterine Devices

Presently there are at least four major types of IUD's in use: the Lippes loop, Margulies spiral or coil, Birnberg bow and the ring. These devices are made of polyethylene impregnated with barium sulfate for radiopacity. The plastic is "physiologically inert," and has the ability to retain its programmed shape after being introduced into the uterus with a special inserter.

Advantages of the Intrauterine Device

There are many reasons for the current surge of popularity of the intrauterine method over oral or mechanical contraception. These other reversible methods of birth control require repeated motivation on the part of the patient if they are to be successful; but once it is properly inserted, the IUD remains effective until removed requiring no further motivation by the wearer.

In the midst of today's debate over oral steroids for contraception, the IUD represents a simple method especially suitable in patients for whom oral contraceptives are contraindicated. Lippes called the devices "non-carcinogenic" in that they decrease parity, one of the etiologic factors in carcinoma of the cervix.

Analyses of endometrial biopsies have demonstrated no cytologic abnormalities in IUD wearers and bacteriologic studies of IUD users have shown no alteration in the endometrial bacterial flora.

Disadvantages of the Intrauterine Device

Menstrual abnormalities will be seen in 70 to 90 per cent of patients following insertion of the IUD, but after two or three menstrual cycles the number complaining has fallen to less than 10 per cent. With each succeeding cycle the patient's normal pattern is more likely to prevail. In most cases the abnormality in the bleeding pattern is based on a local endometrial reaction to the device, and removal is certainly not indicated.

Expulsion of the device, whether noticed by the patient or not, is extremely important. *Table 1* shows the magnitude of expulsions of the various devices; it may be seen that the coil and ring have higher rates of expulsion than the bow or loop. Each instance of expulsion must be considered separately for there is no "perfect IUD." Each patient deserves at least one reinsertion of the same device or one of a different size or style.

This Table does not include the number of devices retained after reinsertion, which is successful in one half to two thirds of the cases.

TABLE 1

EXPULSIONS OF THE INTRAUTERINE DEVICE

Author	Number of Patients	Per Cent Expelled In 1st 12 Months	Device Used
Tietze	11,704	10.4	Loop
Tietze	2,654	22.5	Coil
	5,326	9.9	Loop
	2,085	2.4	Bow
	1,157	18.2	Ring
Hall	2,906	14.2	Mixed
Jackson	17,000	7 to 30	Mixed
Southam . . .	3,090	16.2	Coil
	2,374	7.0	Loop
	1,037	1.8	Bow

The high rate of *removals* of the IUD, either medically-indicated or not medically-indicated, is a cause of concern for proponents of the intrauterine method of contraception.

Table 2 shows the rates of removal of the various devices. Total removals average between 15 and 20 per cent, with about two thirds medically-indicated and one third at the request of the patient. Once again, this Table does not include the devices that were subsequently reinserted by the physician.

TABLE 2

REMOVALS OF INTRAUTERINE CONTRACEPTIVE DEVICES

Author	Number of Patients	Removals		Device Used
		MEDICALLY INDICATED	NOT MED. INDICATED	
Tietze	11,704	14.0	3.1	Loop
Tietze	2,654	22.4	8.8	Coil
	5,326	13.7	4.5	Loop
	2,085	9.1	2.0	Bow
	1,157	9.3	4.8	Ring
Jackson . . .	17,000	5 to 14	—	Mixed
Southam . .	3,090	14.7	—	Coil
	2,374	11.9	—	Loop
	1,037	4.6	—	Bow
Margulies .	2,100	6.2	10.0	Coil

Contraindications to the Use of the Intrauterine Device

There appear to be only two absolute contraindications to the use of the IUD. First of these is *pregnancy*, which must be ruled out before insertion can be considered. The second absolute contraindication is *pelvic inflammatory disease*, either past or present.

Relative contraindications to the use of the IUD include: uterine fibroids, congenitally malformed uterus, nulligravidity, or dysfunctional uterine bleeding.

Although infection has been feared following the use of the intrauterine device, it has not proved to be a problem in patients who have been screened carefully. It is not felt that the IUD itself can cause pelvic inflammatory disease in a previously uninfected patient. When infection does occur in a patient wearing an IUD, it usually occurs some time after insertion and may be treated in the standard manner with the device left in place.

EFFECTIVENESS OF THE INTRAUTERINE DEVICE

Holding Rate

The intrauterine device provides an effective method of birth control; having a theoretical protection rate of 95 to 98 per cent compared to oral contraceptives which are virtually 100 per cent effective. A realistic clinical method of evaluating the IUD is known as the holding rate; the per cent of women still wearing the IUD one full year after the first insertion. All pregnancies, expulsions and removals are subtracted. The holding rate assumes *no* reinsertions.

Table 3 gives the holding rates for the major devices in three separate studies. In general, some 70 per cent of women remained protected at the end of one year of "isolation" from the physician who inserted the device.

TABLE 3			
HOLDING RATE OF THE INTRAUTERINE CONTRACEPTIVE DEVICE			
Author	Number of 1st Insertions	Device Used	Holding Rate
Tietze	11,704	Loop	69.7
Tietze	2,654	Coil	67.6
	5,326	Loop	74.9
	2,085	Bow	83.1
	1,157	Ring	70.0
Hall		Coil	48.4
	2,906	Loop	79.0
		Bow	75.0

Pregnancy Rate With the Intrauterine Device

Pregnancy occasionally does occur after a patient has been fitted with an IUD, but there are often logical explanations for the apparent failure of the device. Unnoticed expulsions have been shown to account for one third to one half of the subsequent pregnancies. In Table 5 we see that 54 of 216 perforations (25 per cent) were followed by pregnancy. Finally, some women were found to have been pregnant prior to the insertion of the IUD.

As shown in Table 4, the highest rates of pregnancy are seen with the bow or ring and the lowest with the coil or loop. In the population at risk in these studies one may expect a pregnancy rate of 50 to 80 per hundred woman-years (HWY) among unprotected women.

Uterine Perforation by the Intrauterine Device

One of the most significant complications of the intrauterine method of contraception is perforation of the uterus by the device or by the inserter. Only a fraction of the true number of perforations have been reported, primarily because the condition was never diagnosed. Ratnam and Yin stated that only when physicians are fully aware that perforation can occur at the time of insertion, and only when they anticipate this problem, will the true incidence of perforation be known.

Diagnosis of Perforation

The diagnosis of perforation must be kept in mind and ruled out in any patient complaining of

TABLE 4			
PREGNANCY WITH THE INTRAUTERINE CONTRACEPTIVE DEVICE			
Author	Number of Patients	Device Used	Raw Pg. Rate Per HWY
Tietze	11,704	Loop	2.8
Tietze	2,654	Coil	1.8
	5,326	Loop	2.4
	2,085	Bow	5.7
	1,157	Ring	7.5
Hall	2,906	Mixed	8.0
Jackson	17,000	Mixed	1.5 to 5.5
Southam	3,090	Coil	1.1
	2,374	Loop	1.4
	1,037	Bow	3.9
	1,184	Ring	3.5
Margulies	2,100	Coil	0.6

severe cramps or bleeding shortly after insertion of the device.

If the device has passed completely through the uterine wall and lies free of the peritoneal cavity (the Type "A" perforation of Esposito), the tail of the IUD will be missing. The absence of the tail will suggest to the patient, or physician, that something is amiss although the tail will retract up into the endometrial cavity in about 15 per cent of normal placements.

The Type "B" perforation described by Esposito, in which a portion of the device is embedded in the wall of the uterus, is especially difficult to diagnose. In this type, the tail may look entirely normal, or the threads may be shortened or retracted up into the uterus.

Standard A-P and lateral x-rays of the pelvis may look entirely normal in the type "B" perforations and may be misleading in type "A" perforations. Only if these x-rays are grossly abnormal is the diagnosis of perforation certain. It has been suggested that, for these initial x-rays, a sound be inserted properly into the uterus so that the location and direction of the cavity may be visualized. In many cases even this technique may not be sufficient. Then, low-dosage hystero-graphy is required to accurately locate the device and its relation to the uterus.

Frequently, a patient will request removal of the device, and either the threads are gone or the attempted removal causes undue pain, bleeding or resistance. This failed removal may indicate that the device is totally or partially displaced. Vaginal examination may permit palpation of the device in the

cul-de-sac or vaginal fornices. If the patient complains of amenorrhea, nausea and vomiting or any of the other symptoms of early pregnancy, the physician must suspect unnoticed expulsion or uterine perforation rather than failure of the method.

When *pregnancy* thus complicates uterine perforation by the intrauterine device, utmost care must be taken, the IUD left in place and the pregnancy undisturbed. The device itself is extra-ovular and has not been known to produce fetal abnormalities. A scout film of the pelvis may be taken without harm to the fetus, but hystero-graphy is obviously contraindicated until after delivery and uterine involution. Further management would depend on whether type "A" or "B" perforation is present.

Treatment of Uterine Perforation

The treatment of uterine perforation by an IUD must be highly individualized. Some patients will demand immediate removal because they cannot psychologically cope with the idea of a free-floating, foreign body in their pelvis. The type "B" perforation is the more serious of the two since the device may serve as a fixed point, or loop, about which intestinal obstruction or volvulus may occur. Most authors consider perforation of the "B" type to be a surgical emergency demanding immediate action.

The course of therapy in the type "A" perforation depends on whether the IUD involved is the "open" loop or coil, or the "closed" bow or ring. An "open" device may be found among coils of bowel, but the IUD is flexible enough to allow intestinal continuity with little danger of obstruction. On the other hand, the bow or ring free in the peritoneal cavity is just as dangerous as any device partially embedded in the uterine wall. Thus, the "closed" IUD free in the abdomen is also considered a surgical emergency, but the loop or spiral may be removed as an elective procedure. Since the polyethylene is inert, there would seem to be no hazard in leaving the device *in situ* other than the possible entanglement with the small bowel.

Attempts at removal may be made with the operating culdoscope or through a posterior colpotomy, but in the majority of cases removal is done under direct vision at laparotomy.

Prevention of Uterine Perforation

When reports of uterine perforation by the IUD were first being made, there was a great fear of "pressure erosion" of the device through the wall of the uterus. There now appears to be universal agreement that perforation occurs virtually exclusively *at the time of insertion*.

After a careful bimanual vaginal examination, the depth and direction of the uterus should be sounded. A tenaculum is used to lessen flexion and decrease the chance of perforating the wall opposite the flexion. Lay stated that the IUD should be inserted only by a physician, but a thorough knowledge of the anatomy of the uterus would seem to be the only requirement for paramedical personnel.

Hatcher pointed out that the friction of the inserter passing through the cervical canal may cause pain and may tend for the physician to exert too much force. He found that a Number 5 gelatin capsule over the end of the device would provide a smooth, rounded end that would pass easily into the uterus. Once inside, the capsule melts without a trace.

The *time of insertion* after pregnancy is quite important since the recently pregnant uterus may remain enlarged and softened. Liss and Andros were concerned that many clinic patients were seen by a physician only in relation to a pregnancy and delivery; therefore, immediate postpartum insertion of the IUD might be the only chance of providing contraception for that patient. Unfortunately, postpartum insertion is followed by an unacceptable expulsion rate of up to 30 to 40 per cent, although the risk of perforation is no higher provided the device is properly inserted. Currently the vast majority of IUD's are inserted at the time of the six weeks' check-up; but many authors feel that oral or mechanical contraception should be used for one or two menstrual cycles with the IUD being inserted at eight to twelve weeks postpartum.

Special care must be exercised in dealing with the lactating patient since the uterus may be small and appear completely involuted. Burnhill and Birnberg warn that in this instance the uterus is extremely friable and perforation may occur.

The inserter itself, especially the one required for the Birnberg bow, has been implicated in a number of perforations. The bow fits into a fairly rigid plastic inserter which would be readily passed through the wall of a uterus, although an inserter need be only so rigid as to permit passage through the cervical canal.

Small devices are associated with higher rates of expulsion and pregnancy; however, the device clearly too large will also have a high rate of expulsion. Regardless of the size of the IUD used, Hall and Scott stated that the bow should never be used because of the high rate of complications following its use. Of the 216 reported cases of uterine perforation in *Table 5*, 71 (33 per cent) involved the bow. It is possible, however, that this high percentage may merely reflect the rigid inserter required with this device.

TABLE 5
UTERINE PERFORATION BY THE INTRAUTERINE CONTRACEPTIVE DEVICE

Author	Type of Device				When Inserted (Wks. Pp.)	Latent Interval	Type Perf.	Pg.*	S.I.†	Other Complications
	BOW	RING	LOOP	COIL						
Ammann . .				1	6	1 wk.	A			Pain
Andrews . . .		1				13 mon.	A	1		None
Awon			2			2 mon.	A	1		Same patient
Beasley	1					6 mon.	A			None
Christhilf . .	1	1					A	1		None
Clarke		1				16 mon.	A		1	P.I.D.
Clarke			1		8	3 mon.	B			None
Cooke				1	6	10 day	A			Pain
Davis		1			4	6 mon.	A			None
DeHaan				1	5	4 mon.	A	1		None
DeVilliers . .		1			4	3 mon.	A		1	Intest. obstruct.
Esposito . . .				1	5	3 day	A		1	Peritonitis
Foy		1				13½ yr.	A	1		Pain
Friedman . .				1		3 wk.	A			Pain
Goodhue . . .			1	1	8	1 wk.	A		1	One pain; one P.I.D.
Hall	5		1				A			None
Hall	16	1	2		6		A	16		None
Hall			2		6		A			None
Jensen		1				14 mo.	B			Failed removal
Ledger			5		6		A	1	2	Includes 1 death
Ledger			1		10	Immed.	A			Death
Lehfeldt . . .			1			4 wk.	A			None
Liss				1	4/7		B	1		None
MacFarland .	1				8	Immed.	A			Lactating pt.
Mayer		1				11 mon.	A	1		Ut. perf. at D.&C.
Murphy		1				3 mon.	A	1		None
Nakamoto . .	11				6		A	1		None
Pfanner		1				14 mon.	A	1		None
Price		1					B		1	Intest. obstruct.
Ratnam			78		6		A			None
Rutherford . .		2			6		A		2	Intest. obstruct.
Seward	1					6 mon.	B		1	Intest. obstruct.
Tejuja			1		6	12 mon.	A	1		None
Thambu	1				6	6 mon.	B		1	Intest. obstruct.
Tietze	34	2	6	1	6		A	21		None
Wei			14		5		A	4		None
Willson				2	6	9 mon.	A	1	1	One P.I.D.
Willson			3				A			None
Author's . . .			1		6	20 mon.	A			None
Totals	71	16	119	10				54	12	
			(216)							

* Did the Patient subsequently become Pregnant?
† Did the Patient subsequently become Seriously Ill?

Reported Cases of Uterine Perforation

Table 5 represents all cases of uterine perforation by an intrauterine contraceptive device that have been reported in the English language literature of the past three decades. There are 216 cases in all, including the one seen by this author. The IUD's involved were: the bow, in 71 cases; the ring, in 16; the loop, in 119; and the coil, in 10. The magnitude involving the loop merely reflects the popularity of that type of intrauterine device.

The time of insertion is given in the number of weeks postpartum provided that information was given in the original article. The interval between insertion and diagnosis is given in months, in most instances.

Of the 216 cases, 208 were type "A" perforations with only eight of the type "B." Fifty-four of the patients became pregnant because of the displacement of the IUD. In addition, there were two reported deaths due to overwhelming sepsis.

Case Presentation

A 22-year-old female, gravida 2, para 2, had a Lippes loop inserted by another physician at the time of her six weeks' postpartum check-up. Following insertion, she experienced cramps and bleeding; but the device was left in place. Subsequently, the patient developed menometrorrhagia; removal of the IUD was attempted in the physician's office some four months later. At this time, traction on the tail of the device caused pain and the threads suddenly broke off. The patient was hospitalized. Two separate attempts were made to remove the device under general anesthesia. Since at this time the location of the IUD was uncertain, she was started on oral contraceptives.

Sixteen months later, the patient saw the second physician requesting removal of the device regardless of the method necessary because she was "frightened of this loop floating around inside." X-rays of the pelvis revealed the IUD to be "in its usual location, but transverse in its axis." Under general anesthesia, removal was attempted following dilatation

and curettage. The physician was unable to grasp the IUD with forceps. On sounding the uterus once again, he discovered that there had been an accidental perforation in the cornual region. Because of this perforation, and because the IUD had still not been removed, laparotomy was performed.

A minute perforation was seen high up on the dome which was closed with a through-and-through suture, as seen at the top of *Figure 1*. The loop was clearly visible through a glistening layer of parietal peritoneum (the bladder flap). The loop was re-

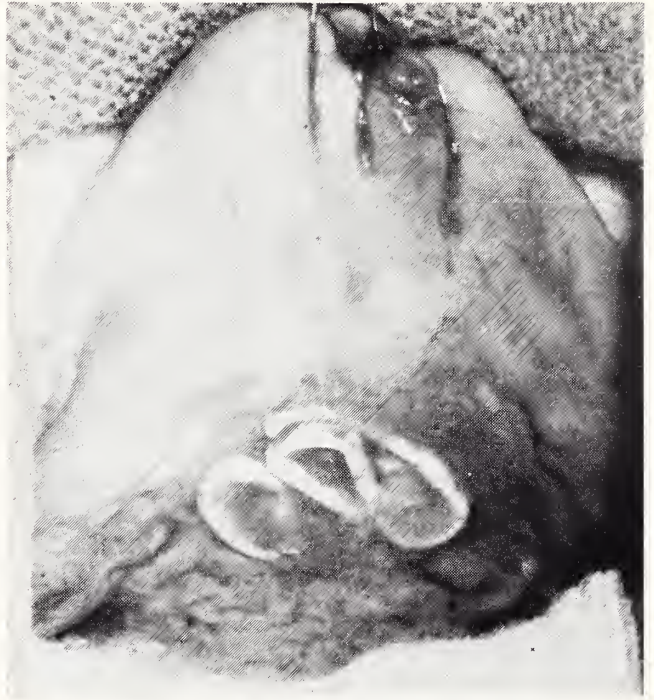


Figure 1. The uterus as seen at laparotomy.

moved, and the area reperitonealized. It was noted that there was no peritoneal reaction to this foreign body, which had been in this location for 20 months. An incidental appendectomy was performed; the patient recovered without difficulty, being discharged on the seventh postoperative day.

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Clinical Cardiology

Newer Concepts of the Evaluation of Cardiac Function

**WILLIAM W. PARMLEY, M.D. and
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IN DEALING WITH the diseased heart, the clinician must make two important judgments. First, the underlying cause of the disease and associated anatomic defects must be determined, and second, the functional consequences of the lesion must be assessed. Although this latter judgment can often be made by a careful history and physical examination, or by imposing a stress such as mild exercise, it is often necessary to make more precise physiologic measurements of cardiac function, which are best obtained during diagnostic cardiac catheterization. This article will briefly discuss some aspects of the cardiac evaluation obtained during catheterization which deal both with the function of the heart as a pump and with the contractile properties of the heart muscle itself. In particular, it is necessary to evaluate to what extent an anatomically correctable defect is causing abnormal loading and "pump" failure and to what degree a depression of cardiac muscle function itself has occurred.

The primary function of the heart is to maintain an adequate cardiac output appropriate to the changing energy requirements of the body. The cardiac output, which is determined by peripheral metabolic needs and return of venous blood, is the product of heart rate and stroke volume. The stroke volume of the ventricle, in turn, is influenced by three factors: (1) the preload or end-diastolic volume, (2) the afterload or pressure level which must be reached in order to eject blood into the aorta, and (3) the contractile state or "vigor of contraction" of the heart muscle.

The stroke volume of the heart is adjusted beat-to-beat by changes in preload or end-diastolic volume. Thus, as the filling pressure and diastolic volume of the ventricle are augmented, the stroke volume increases, while the fraction of blood ejected by the ventricle remains relatively constant. This increase in stroke volume resulting from increments in end-diastolic is known as Starling's law of the heart, and

is a primary mechanism whereby cardiac output is altered on a beat-to-beat basis.

The second factor which influences stroke volume is the afterload. For example, from the same end-diastolic volume, a marked increase in aortic pressure will reduce stroke volume, while a decrease in aortic pressure will increase stroke volume. The reduction in stroke volume in a given beat due to an increased afterload, leaves blood behind in the ventricle so that subsequent end-diastolic volume will be larger. With this increase in end-diastolic volume, the stroke volume will go up and output will be restored.

The third factor which influences stroke volume is a change in the contractile state of the heart muscle. The contractile state, or contractility of the heart, reflects the vigor of contraction and is characterized by the speed and extent of contraction. Normally the contractility of the heart is increased by norepinephrine which is released reflexly from sympathetic nerve endings in the heart or from the adrenal glands and is carried by the blood stream to the heart. The increase in the extent of muscle shortening (which accompanies an increase in contractility) is manifest by an increase in stroke volume at the same end-diastolic volume. Thus, the fraction of blood ejected from the ventricle during each systole is augmented by an increase in the contractile state of the heart muscle.

In disease states, pump performance and muscle function may not be deranged simultaneously. Thus, in severe aortic stenosis, the imposed afterload may be of such a magnitude that pump performance is impaired despite relatively normal muscle function. Similarly, in the presence of massive intracardiac or peripheral arteriovenous shunting of blood and markedly elevated cardiac outputs, congestive failure with massive fluid accumulation may ensue, although underlying myocardial function may be normal. It is essential to distinguish failure due to abnormal loading of the heart from that resulting from depression of muscle function *per se*.

The function of the heart muscle itself may best be analyzed in terms of the relationship between

* Cardiovascular Division, Peter Bent Brigham Hospital and Harvard Medical School, Boston, Massachusetts.

Prepared for the JOURNAL by the Kansas Heart Association.

force development in the wall of the heart and the velocity of muscle shortening. This "force-velocity" relation is the most fundamental mechanical relationship of heart muscle and can be calculated from pressure and volume measurements obtained during catheterization. Although this cannot be routinely measured at present, current experimental studies suggest that it may become an integral part of future diagnostic catheterization studies. The value of this approach is that it provides a more precise measurement of muscle function aside from overall pump function of the heart which may be influenced by valvular defects or abnormal shunting.

Although a consideration of the above factors allows one to describe cardiac function as a whole, it has recently become clear that localized areas of heart muscle have altered function, particularly in patients with coronary artery disease. With cine ventriculograms obtained by the injection of radiopaque dye into the left ventricle, regional abnormalities of contraction may be recognized. These include areas of the heart wall which do not move at all (akinesis), areas which contract poorly (hypokinesis), and areas which expand rather than contract (dyskinesis). In addition it is also clear that asynchrony of contraction of the entire heart may also influence cardiac function adversely.

Recent studies have also demonstrated that resting measurements of pump function during cardiac catheterization may be essentially normal in the face of considerable disease of the myocardium. Thus, it becomes important to elicit abnormal function by stressing the heart. This is commonly done by having the patient perform supine bicycle exercise, by the intravenous administration of a catecholamine such as Isuprel, or by increasing the heart rate with electrical pacing. Furthermore, abnormal function may also be elicited by increasing the afterload with angiotensin which increases arterial pressure but does not appreciably affect the contractile state of the heart itself. In patients with coronary artery disease, stress tests of the heart have been particularly useful in eliciting regional metabolic abnormalities (lactate production) as an indicator of regional hypoxia associated with angina pectoris. Such functional abnormalities have correlated well with the anatomic demonstration by coronary arteriography of occlusion or stenosis of a major vessel to that area of myocardium. The value of measurements made during stress testing of the heart, therefore, is that abnormalities may be induced which are indicative of limited cardiac reserve even though the function of the heart as a pump may appear normal at rest.

In summary, therefore, the pump function of the heart can be measured in terms of filling pressure (end-diastolic volume) and stroke volume, while contraction properties of the heart muscle itself are measured by the "force-velocity" relation of the muscle. Furthermore, regional contraction abnormalities can be evaluated by the use of cine studies of the contracting left ventricle. A combination of the above studies can provide valuable information to the practitioner which is of considerable benefit in both the diagnosis and treatment of clinical heart disease.

FILM FROM AYERST LABS

A current medical film that offers considerable potential for an informative and provocative program on estrogen replacement therapy is *The Long-Range Problems of the Postmenopausal Woman*. This film is now available for showing to interested medical groups.

The running time is 43 minutes; color and sound. It was filmed simultaneously across the nation, with Dr. Allan C. Barnes of the Department of Gynecology and Obstetrics, the Johns Hopkins Hospital, presiding in Baltimore; and with Dr. Herman I. Kantor, Clinical Professor of Gynecology and Obstetrics, the University of Texas Southwestern Medical School in Dallas, and Dr. Gilbert S. Gordon, Professor of Medicine, Chief of Bone & Stone Clinic, University of California Medical Center in San Francisco, joining him in animated discussion.

After a vivid introduction by Dr. Barnes on estrogen deficiency as a serious disease requiring medical treatment, the subject is then pursued with Dr. Kantor on the emotional and mental aspects of the problem, and on the diagnosis and treatment of osteoporosis with Dr. Gordon.

To obtain this film for an early showing at one of your group's continuing educational projects, write to: John B. Jewell, M.D., Medical Department, Ayerst Laboratories, 685 Third Avenue, New York, New York 10017.

Drivers under 25 were involved in much more than their share of auto accidents in 1969, according to a report from The Travelers Insurance Companies. One fifth of all drivers are under 25, but, the under-25 group was involved in one third of last year's fatal accidents.

The President's Message

To continue with an outline of Society organization and the functions of KMS, I will describe the commission activities in this and the next issue.

By action of the House in 1966, KMS decided to coordinate its activities by changing to a commission form of organization. The following commissions were formed: Society Organization Sociology and Economics, Education, Health Services and Scientific Study. All committee activity was assigned to one of these commissions.

Each commission chairman is appointed by the President of KMS. After meeting with the commission chairman, appointing the commission members of each commission and outlining proposed activities for the year, the commission members are asked for any recommendations for additional committee members. The President takes this under consideration, then appoints the committee membership. Some of the committees are larger than others, depending on their scope of activity. The President attempts to make appointments according to expressed desires of the individual when possible.

COMMISSION FOR SOCIETY ORGANIZATION—W. E. Meyer, M.D. of Wichita, chairman. The President-Elect and Speaker of the House are the liaison members for the Executive Committee and meet with this commission. There are 18 members, each of whom is a chairman or vice-chairman of a specific committee activity assigned to this commission. The topics assigned for the present year include: New Member Orientation, Contributions, Selective Service, Medical Assistants, Non-Member Physicians, Services to/by Members, Nursing Liaison, State Meeting, Executive Office Activity, the JOURNAL, Woman's Auxiliary, and Constitution and By-Laws.

As areas of concern or needs arise or suggestions from committee members are made on any specific item relative to the above subjects, they are assigned to the appropriate committee for study and recommendations back to the commission chairman. This develops the recommendations sent to the House of Delegates.



COMMISSION FOR SOCIOLOGY AND ECONOMICS—E. J. Ryan, M.D. of Emporia, chairman. The Second Vice President is the Executive Committee liaison advisor for this commission. There are also 18 members of this commission. The responsibilities of this commission include: Peer Review, Insurance for Members (Liaison with Washington National), Welfare, Relative Value Fee Schedules, Medical Services Advisory, Medical Advisory, Surgical Advisory, OEO, Malpractice, Relations With the Bar Association, Consumer Relations, Health Insurance Council, Industrial Relations, Utilization, and Blue Shield Study.

The committee activity, study and recommendations follow the same procedure as described under the Commission for Society Organization.

As you can see from the foregoing explanation, there is widespread opportunity for all members of our Society to voice their opinions and to have an important part in determining the broad, basic policy decisions of the Kansas Medical Society.

I will continue with the other commissions next month.

FRANCIS T. COLLINS, M.D., *President*



Medicine Replies to Criticism

(Starting next month, look for the new VOX DOX section in the JOURNAL. Perhaps something like the following would be appropriate for VOX DOX. If you think this reply to the criticism appearing in the press against medicine would be of interest to the editor of your paper, you are welcome to give it to him.)

The Kansas Medical Society attempts in the statement that follows to present a factual, unemotional reply to criticism that physicians are responsible for the increasing cost of health care and that they are abusing government sponsored health programs.

Of course, it is true in medicine as in every other field, that not every one is honest. We believe the percentage of physicians who cheat the government or any other third party purchaser of health services to be so small as to be negligible in effect. We think this opinion can be supported by two facts.

First is the close scrutiny under which the physician works. In the hospital every tissue, surgically removed, is evaluated by a committee of doctors to determine if the operation was in fact necessary. Non-surgical hospital admissions are examined with equal diligence as to length of stay and services performed. Deviations from normal practice as established by physicians in the area are brought to the attention of the doctor involved. And here under-utilization is of equal importance with over-utilization. If the physician cannot justify his practice before his peers, his hospital privileges are restricted or taken away.

Office practice, although not as easily controlled, is also checked whenever more or fewer visits appear than is normal for the diagnosis. Too many or not enough prescriptions establish the case for review. Committees at the state and local level individually explore every such instance, not, if we may add, because of fear of the government, but because the

Kansas Medical Society has always held that every patient regardless of who pays his bill deserves full value for money spent upon his health care.

The second fact is that almost every doctor has more demands made upon his time than he wants. He is looking for less, not more, work to do. He is too much occupied with needed care to provide unnecessary service. If he sees a patient more frequently than his professional judgment dictates, he takes that much time away from his other patients.

The dishonest doctor is sooner or later discovered and dealt with by the ethics committee of his local or the state medical society. Violation of the code of ethics may cost him his license to practice medicine. This is done on an average to, perhaps, two physicians a year.

So, for the two reasons mentioned above, we are confident that almost every one of the 2,500 doctors in this state honestly tries to practice good medicine and performs for each patient whatever professional service he thinks is medically indicated.

The increased cost of health care is apparent but this subject also deserves an explanation. The most dramatic increase is in hospital expense which is primarily caused by wages. The cost of maintaining a doctor's office has increased not in small part because of the paper work that is now required. And the price of drugs has risen.

However, there is at least one other factor contributing to the increased cost of health care. The practicing physician is now continuously monitored not only by his peers, but by officials of the third party paying the bill, including government, and also by the patient himself, who is more knowledgeable today about the quality of his care than ever before. And he is more particular than before also. So, to protect himself against the charge that he was careless or that he missed something, it is common prac-

tice for the doctor to order more tests than the patient's condition indicates. These are often in search of situations about which the patient has no symptoms. This is in fact good medicine. It is preventive medicine, but it increases the cost of health care.

Now examine for a moment what the physician gets. First, his professional education is expensive even though the state bears a portion of the cost. Second, it is long. Most doctors are thirty years of age when they begin practice. Third, contrary to some other profession or business, the doctor's income depends almost completely upon what he does. If he remains healthy and is willing to work at night and on Sundays, his income is good, but it depends upon how much he is willing to do. The day of the high fee is over. True also, that the day of free care for the poor has passed, but with controls over his charges the doctor with a high income must have seen many people and must have worked many hours.

At the beginning, we said this was an attempt to answer charges levelled at physicians. There is one

more reply. Present day health care has been called horse and buggy, corner grocery store medicine, inefficient, obsolete. There will be changes in the delivery system of health care. Some assembly line features will become common. Patients evaluated through screening processes as not really ill will be shunted to a nurse, a social worker, a minister, thereby presumably freeing the doctor to more efficiently use his special skill where most needed.

The patient will not universally applaud this change, nor will every physician. There is, in spite of all the criticism, something good in the present delivery of health services. One person is sick and one doctor, selected by the patient, gives to him a period of his undivided attention. Whatever this lacks in efficiency is made up in the trust the patient has that he can get well. It has worked to some demonstrated success. If illness costs more today, it occurs less, is of shorter duration and people live longer than they did.

FRANCIS T. COLLINS, M.D., *President
Kansas Medical Society*

Education-Information

Program Report June 15-July 15

HANK PARKINSON, *Coordinator*

The clipping service indicates that the education-information program launched by the Society May 15 has been favorably received by Kansas editors.

Reviewing clippings at a recent meeting in Topeka, we counted more than 50 stories on the same theme used in Kansas weeklies alone. This indicates that we should continue to service the weekly papers with the same schedule of releases as the dailies and the electronic media.

Releases prepared and distributed during the 30-day period included:

1. The Society's views of the new Kansas abortion laws.
2. A story noting that because of new patient review procedures, the amount of time patients spend in the state's various hospitals is being reduced.
3. An item on how to more conveniently find a doctor in times of need.
4. A story noting the family doctor is not a thing

of the past and that 43 per cent of all Kansas physicians are now engaged in family practice.

Usage on all stories sent out during the period was satisfactory. However, the story dealing with abortion laws was particularly well received. Several newspapers editorialized on this subject, including the important *Hutchinson News*, which noted:

"The new laws are good, and reasonable, and the KMS should be praised once again for quietly lobbying for them and for the continuing program of educating Kansans."

Also during the month, four 60-second and four 30-second spots were prepared and distributed to the 68 AM stations and 22 FM stations in the state. These spots are to run from July 15 through September 15 and should do much to alert the Kansas radio audience to various health hazards.

The "filler service" has begun. Under this program, 50 or more fillers will be sent to all daily and weekly newspapers, noting various medical facts, giving hints and generally contributing to the education program.

American Medical Association

Summary of Actions of the House of Delegates, 119th Annual Convention, Chicago, June 21-25, 1970

IN ITS FIRST uninterrupted annual convention since 1967 (thanks to the most elaborate security precautions ever taken), the House of Delegates considered a record volume of business; passed a hotly debated statement on abortion; raised membership dues to help finance needed programs; heard outgoing President Gerald D. Dorman challenge the Association to attain and maintain a specific minimum health standard of "a healthy child and a healthy mother"; and applauded newly inaugurated President Walter C. Bornemeier's call for greater emphasis on patient care through an overhaul of medical education and training.

Final Report and Inaugural Address

In his final report to the House, Gerald D. Dorman reminded the profession that "We expect to be recognized and accepted as the leaders of medical and health care planning and action . . . because our experience has made us the best qualified to give leadership in medical care. But if we are to continue in that position, we must earn it. We must deserve it, not because of reputation or tradition, but because of visible achievement. . . ."

"I want to see all our physicians—our obstetricians and gynecologists, our pediatricians, our general practitioners, our internists and other specialists—renew their contact with the rest of the health team and rededicate themselves to this minimum health standard . . . throughout our population."

Walter C. Bornemeier, in his inaugural address as the AMA's 125th President, cited five areas for improvement in medical education and training: shortening the medical school curriculum; modernizing and shortening residency programs; relating more medical training to patient care at an earlier point; assimilating full-time teachers into patient care; and reducing the number of medical research institutions and researchers.

"In any new graduate program, we might be advised to emphasize again a preceptorship method of training," he said. "If MD graduates could be trained in the active practice of medicine outside the hospital with a physician or group approved for teaching, the doctor shortage would in large measure be solved." He pointed out that such training would emphasize what makes people sick as well as how to make them well again.

Those changes would allow the physician to undertake more rapidly the responsibility "commensurate with his skills and knowledge" and might "overnight add 50,000 doctors to the care of patients in our communities."

House Actions

From June 21 through June 25, the House was in business sessions for 17 hours and 15 minutes, during which it considered a record 201 items of business.

Abortion

After long debate before the reference committee and on the floor of the House, delegates adopted the following statement on abortion:

"WHEREAS, Abortion, like any other medical procedure, should not be performed when contrary to the best interests of the patient since good medical practice requires due consideration for the patient's welfare and not mere acquiescence to the patient's demands; and

"WHEREAS, The standards of sound clinical judgment, which, together with informed patient consent should be determinative according to the merits of each individual case; therefore be it

"*Resolved*, That abortion is a medical procedure and should be performed only by a duly licensed physician and surgeon in an accredited hospital acting only in conformance with standards of good medical practice, and after consultation with two other physicians chosen because of their professional competence, and within the Medical Practice Act of his State; and be it further

"*Resolved*, That no physician or other professional personnel shall be compelled to perform any act which violates his good medical judgment. Neither physician, hospital, nor hospital personnel shall be required to perform any act violative of personally held moral principles. In these circumstances, good medical practice requires only that the physician or other professional personnel withdraw from the case so long as the withdrawal is consistent with good medical practice."

Consumer Forum

For the first time in its history, the House appointed a special reference committee to hold a pub-

lic forum, at which individuals and representatives of groups could present their views of medical and health care. The committee heard three hours of testimony on the opening day of the convention. From its report, the House adopted the following recommendations:

"That consideration be given by the Board of Trustees to the creation of a multi-ethnic advisory committee on health care problems of minority groups.

"That the House of Delegates reaffirm its policy of encouraging physicians, as well as paramedical personnel to continue to provide compassionate and sympathetic care to all patients.

"That the House of Delegates reaffirm Resolution 62, Annual Convention 1969, which states in part: 'It is a basic right of every citizen to have available to him adequate health care' . . . and that 'the medical profession, using all means at its disposal, should endeavor to make good medical care available to each person.'

"That the AMA Advisory Committee on Health Care of the American People be invited to participate in reference committee hearings" of this type if they are held in the future. Consideration of having such an open forum at each AMA convention was referred to the Board of Trustees.

Dues Increase

The House directed that "basic and explicit information supporting the need for a dues increase, and future dues increases, be promptly disseminated by the AMA to individual members by every reasonable and available means possible; and that the aid of constituent state associations be enlisted in this effort."

The new dues of \$110 will become effective with the next fiscal year, beginning December 1, 1970. This is an increase of \$40 per year.

Planning and Development

One of the longest debates of the meeting involved creating a body for long-range planning and development. When the matter was settled, a standing committee of the House—the Council on Long-Range Planning and Development—had been created and the bylaws had been changed appropriately to accommodate it.

The council will have nine members. Four will be appointed by the Speaker (two from the House and two from AMA membership at large) and four will be appointed by the Board (two members of the Board and two from AMA membership at large). The ninth member will be appointed by the President of SAMA. The council is required to submit reports to the House at each regularly scheduled convention of the AMA.

Recommendations

That the AMA reaffirm, as a statement of the primary purpose and responsibility of the Association and the medical profession, "the promotion of the art and science of medicine and the betterment of public health," and, as part of this purpose, apply all possible effort to make medical services of high quality available to all individuals.

That the American Medical Association recognize the need for multiple methods of delivering medical services, and that it encourage and participate in efforts to develop them.

That, in the interest of attracting the most highly qualified candidates to the field of medicine, it simultaneously make every effort to maintain and create incentives in medical practice. Among these incentives are a multiplicity of practice options, maximum professional independence and freedom of choice for both physicians and patients.

That, clearly recognizing the health of individuals has many aspects other than medical care, such as education, housing, environmental control, transportation, civil rights, and the alleviation of poverty, the American Medical Association continue to show an active, innovative and constructive interest in these non-medical components of health services.

That the AMA and the constituent and component medical societies seek the active cooperation of all physicians, both as individuals and as members of medical staffs, in medical service projects for areas in need of medical services.

That the AMA, through its Council on Health Manpower, in conjunction with county and state medical societies and other professional, educational, and lay associations, continue to explore and develop expedients to overcome health manpower shortages.

That the Association, in its future declarations and activities directed toward the alleviation of shortages in health services and personnel, underscore the fact that these shortages are not due merely to an insufficient number of health professionals across-the-board, and emphasize that maldistribution of practitioners geographically, by profession, and by specialty is an equally important factor in depriving communities of an adequate supply and spectrum of health services.

That the Association publicize the reasons for the maldistribution, as outlined in this section, and stress that the voluntary correction of these deficiencies requires public cooperation and community action in addition to the measures taken by the health professions.

That an appropriate committee of the AMA immediately begin to formulate a policy on physicians' assistants, particularly with regard to their responsi-

bilities, limitations on their services, and supervision of their services by qualified physicians.

That the AMA approve in principle certification of educational programs for physicians' assistants but oppose licensing of these individuals by any state agency.

That the Association, in appropriate public statements, emphasize the concept that differences in education, state laws, culture and income levels create problems that may necessitate different systems of delivering medical care for different population groups and different geographic areas.

Urge state medical associations to establish bureaus or departments of economic research, development and planning to study, develop and disseminate data concerning the economic aspects of medical practice.

That the AMA reiterate its support of sound, existing mechanisms, such as public grievance and adjudication committees, and utilization and peer review committees, which state and county medical societies have found to be most appropriate and effective for the consideration of fees and the costs of medical and related care.

That the Association obtain information from each state medical society as to whether special requirements have been imposed on physicians who render services to patients under the provisions of tax-supported programs and obtain the specifics of what those requirements are.

Education

In December, 1968, the House agreed that "an ultimate goal is unification of the internship and residency years into a coordinated whole." To move closer to that goal, in this meeting the House adopted the following statements:

"After July 1, 1971, a new internship program shall be approved only when the application contains convincing evidence that the internship and the related residency years will be organized and conducted as a unified and coordinated whole.

"After July 1, 1975, no internship program will be approved which is not integrated with residency training to form a unified program of graduate medical education."

Professional Liability

The House approved a Board report stating that liability insurance protection is essential so that physicians may continue to provide needed medical care to the public. "It has been concluded," the report said, "that the best way to provide such assurance is on a collective, rather than an individual basis, under programs jointly sponsored by the American Medical Association and the respective state medical association. . . . Minimum standards for an effective

sponsored insurance program are being developed" and the Professional Liability Committee of the Board "is seeking with the insurance industry a means for instituting qualified insurance programs under such joint sponsorship with state associations which elect to participate."

Miscellaneous

The House supported the Board's plan to establish a wholly owned, separate subsidiary corporation to engage in publication and possibly other related activities now carried on by the AMA in order to gain various economies, lower costs and better administrative and accounting procedures.

Delegates adopted a Board proposal to undertake a "Communications Program for the 1970's," consisting of television documentaries, educational advertising, media relations and other related activities "to improve public understanding and opinion of the profession."

The House resolved to "support continuing efforts by the American Medical Association to inform the medical profession of the value and benefit to be realized from the implementation of adequate peer review programs" and directed the Board, the Council on Medical Service and "other appropriate sections of the AMA" to give this project "the highest priority and emphasize its urgency to all state and component medical societies."

The House directed the AMA to make a detailed and comprehensive study and analysis of the methods and requirements for reporting infant mortality statistics "by those nations that are alleged to have a lower rate of infant mortality than that of the United States."

LUCIEN R. PYLE, M.D.

JOHN C. MITCHELL, M.D.

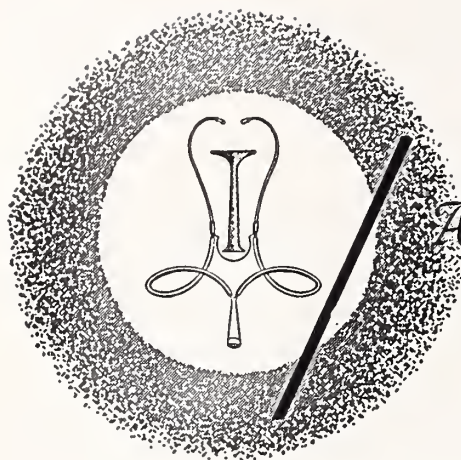
Delegates from Kansas

ELECTED TO AUXILIARY OFFICES

Mrs. Chester L. Young, Kansas City, and Mrs. Chester M. Lessenden, Jr., Topeka, were elected to offices in the Woman's Auxiliary to the American Medical Association, at the 47th annual convention of the auxiliary held in Chicago in June. Mrs. Young was elected to a second term as north central regional vice president, and Mrs. Lessenden will serve a two-year term on the board of directors.

An auxiliary member for more than 20 years, Mrs. Young has served as county and state auxiliary president. She previously served as chairman of the AMA-ERF for the national auxiliary.

Mrs. Lessenden was north central chairman of the International Health Activities committee of the AMA Auxiliary, and is a past president of state and local medical auxiliaries.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the Doctor's Calendar. Notice of the session is posted in advance to allow the physician time to make preparations.

The American Board of Family Practice announces that it will give its second examination for certification in various centers throughout the United States. The examination will be over a two-day period on February 27-28, 1971. Information regarding the examination and eligibility for the examination can be obtained by writing:

Nicholas J. Pisacano, M.D., Secretary-Treasurer
American Board of Family Practice, Inc.
University of Kentucky Medical Center
Annex #2, Room 229
Lexington, Kentucky 40506

PLEASE NOTE: Deadline for receiving completed applications in the Board office is *November 1, 1970*.

AUGUST

- Aug. 20-22 Rocky Mountain Radiological Society, Brown Palace Hotel, Denver. For information write Lorenz R. Wurtzebach, M.D., 4200 E. Ninth Ave., Denver 80220.
- Aug. 20-22 Ninth National Conference on Therapies for Advanced Cancers, University of Wisconsin Postgraduate Center, Madison. For information write R. J. Samp, M.D., University Hospitals, Madison, Wisconsin 53706.

SEPTEMBER

- Sept. 14-16 Continuation course on *Current Practice of Clinical Electroencephalography*, Washington, D. C. Sponsored by the American Electroencephalographic Society. Write for information: Donald W. Klass, EEG Course Director, Mayo Clinic, Rochester 55901.
- Sept. 17-19 American EEG Society, Shoreham Hotel, Washington, D. C.

Sept. 18-20

20th annual scientific assembly, Kansas Academy of General Practice, Holiday Inn, Lawrence.

Sept. 19-25

Annual Otolaryngologic Assembly of 1970, Eye and Ear Infirmary of the University of Illinois Hospital. Otolaryngologists should direct inquiries to: Otolaryngology, P. O. Box 6998, Chicago 60680.

Sept. 25

2nd annual Academic Assembly for Continuing Education of Physicians, devoted to study of non-neoplastic diseases of the colon. St. Francis Hospital School of Nursing Auditorium, Wichita.

OCTOBER

Oct. 5-9

75th annual session, American Academy of Ophthalmology and Otolaryngology, Convention Center, Las Vegas.

Oct. 12-16

56th Annual Clinical Congress, American College of Surgeons, Conrad Hilton Hotel, Chicago. Write: Mr. T. E. McGinnis, ACS, 55 E. Erie St., Chicago 60611.

Oct. 18-23

American College of Emergency Physicians, Scientific Assembly, Las Vegas. For information: Executive Secretary, 120 W. Saginaw, East Lansing, Michigan 48823.

Oct. 22-24

Annual Fall Clinical Conference, Kansas City Southwest Clinical Society, Hotel Muehlebach, Kansas City, Missouri. Contact: Miss Alta L. Bingham, Executive Secretary, 3036 Gillham Rd., Kansas City, Missouri 64108.

(Continued on page 337)

Twentieth Annual Meeting

Kansas Academy of General Practice

HOLIDAY INN

SEPTEMBER 18-20, 1970

LAWRENCE

FRIDAY, SEPTEMBER 18

(Arrangements have been made for golfers and shooters at the Lawrence Country Club and Cedar Hill Gun Club. Practice rounds Friday morning. Trophies will be awarded at the evening buffet.)

- 12:00 noon REGISTRATION
- 6:00 p.m. COCKTAIL HOUR
- 7:00 p.m. BUFFET, for physicians, wives, guests
Donald D. Goering, M.D., President, KAGP, presiding
- 8:00 p.m. BUSINESS MEETING
Introduction of resolutions
Remarks from distinguished guests

SATURDAY, SEPTEMBER 19

- 7:15 a.m. PAST PRESIDENTS' BREAKFAST, for all physicians, wives, guests
Kenneth L. Lohmeyer, M.D., presiding
- 8:30 a.m. BUSINESS MEETING—Election of Officers
Donald D. Goehring, M.D., presiding
- 1:00 p.m. K.U. vs. TEXAS TECH football game
- 6:30 p.m. COCKTAIL HOUR
- 7:30 p.m. ANNUAL DINNER
Donald D. Goehring, M.D., presiding
Installation of Officers—Edward J. Kowaleski, M.D., President, AAGP
"An Evening With Mark Twain"—Mr. Stuart Mossman, Winfield

SUNDAY, SEPTEMBER 20

- 9:00-11:45 a.m. SCIENTIFIC PROGRAM: SPORTS MEDICINE
Donald D. Goehring, M.D., presiding
LIGAMENTOUS INJURIES OF THE KNEE—John D. Leidlolt, M.D., Denver, Colorado
LIGAMENT INJURIES OF THE ANKLE, and BACK INJURIES IN ATHLETES—Lynn O. Litton, M.D., Columbia, Missouri
ERGOGENIC AIDS AND DRUGS IN ATHLETICS—Donald L. Cooper, M.D., Stillwater, Oklahoma
- 12:15 p.m. LUNCHEON, for physicians, wives, guests
Speaker: Edward J. Kowaleski, M.D., President, AAGP
- 2:00-5:00 p.m. ROUND TABLE DISCUSSIONS (Speakers from morning sessions will rotate from room to room for 40 minutes with each section)
Moderators: J. W. Jacks, M.D., Pratt; W. R. Lentz, M.D., Topeka; E. J. Chaney, Belleville



Book REVIEWS

A SYNOPSIS OF CONTEMPORARY PSYCHIATRY by George A. Ulett, and D. Wells Goodrich (4th Edition). C. V. Mosby Company, St. Louis, 1969. 340 pages. \$9.50.

A brief review for the psychiatrist; a ready reference for students; and a general overview of psychiatry for any interested reader.

Major sections on history taking and diagnostic procedures; clinical syndromes; and therapeutic measures. Each section contains ten or more chapters and includes discussions of most theoretical approaches, diagnostic classifications and treatment methods. Chapters on neurological examinations, forensic psychiatric procedures and community mental health add to the completeness and usefulness of the well indexed book. The tables of chemotherapeutic agents, dosages, uses, and side effects are unusually complete and helpful. An extensive bibliography following each chapter adds further to the practicality of this synopsis.—*J.A.D.*

CURRENT CONCEPTS IN OPHTHALMOLOGY (Vol. II) by Bernard Becker and Ronald M. Burde. C. V. Mosby Company, St. Louis, 1969. 267 pages illustrated. \$21.00.

This volume, containing less than three hundred pages, was written to present the current thoughts and practices of the present and former staff of the Eye Department of Washington University School of Medicine. The subjects are timely and the discussions are brief and practical. Discussions include surgical techniques, current concepts regarding herpes simplex and thyroid induced eye changes, diagnostic techniques with fluorescein, contact lens biomicroscopy, gonioscopy and discussions of amblyopia, orthoptics, and dyslexia.—*B.J.A.*

MORRIS FISHBEIN, M.D., an Autobiography by Morris Fishbein. Doubleday and Company, Inc., New York City, 1969. 486 pages. \$10.00.

This is an accounting of years by Dr. Fishbein, who is well known as a writer, educator, advisor, lecturer, toastmaster, and editor.

He is an ambassador of public relations between the medical profession and the patient. He has concern for others.

This is a book for those in all fields of medicine to read, especially when they are in a rut.—*A.B.*

NEW BOOKS RECEIVED

Receipt of the following books is acknowledged. Although space will not permit reviews of all books, Society members interested in reviewing particular books may address requests to the JOURNAL. Following receipt of the written review, the book becomes the property of the reviewer.

A Physician's Living Thoughts by Carl Thenebe. New York, Philosophical Library, Inc. 163 pages. \$4.95.

Current Pediatric Therapy by Sydney S. Gellis and Benjamin M. Kagan. Philadelphia, W. B. Saunders Company. 1,077 pages. \$29.50.

Drugs in Current Use and New Drugs, 1970 by Walter Modell. New York, Springer Publishing Company. 201 pages. \$3.25.

Drugs of Choice 1970-1971 by Walter Modell. St. Louis, C. V. Mosby Company. 924 pages. \$20.50.

Synopsis of Ear, Nose and Throat Diseases by Robert E. Ryan, et al. St. Louis, C. V. Mosby Company. 379 pages, illustrated. \$10.75.

Disability in Antiquity by Farred Haj. New York, Philosophical Library, Inc. 188 pages. \$6.50.

Synopsis of Clinical Cancer by Condict Moore. 2nd edition. St. Louis, C. V. Mosby Company. 267 pages, illustrated. \$11.75.

(Continued on page 337)



Along The BOOKSHELF

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RECENT ACQUISITIONS

- American Public Health Association. Health crisis in America; a report. New York, 1970
- American Society of Internal Medicine, 13th Annual Meeting, Chicago, 1969. Changing concepts in the delivery of health services; program sessions, April 19, 1969. Chicago, Illinois, 1969
- Bryant, John. Health and the developing world. Ithaca, New York, Cornell University Press, 1969
- Clark, Walter Houston. Chemical ecstasy; psychedelic drugs and religion. New York, Sheed and Ward, 1969
- Clark-Kennedy, Archibald Edmund. Man, medicine and morality. Hamden, Connecticut, Archon Books, 1969
- Cole, Warren Henry. Chemotherapy of cancer. Philadelphia, Lea & Febiger, 1970
- Consumers' Association. Infertility. London, Consumers' Association, 1969
- Cutler, Donald R. Updating life and death; essays in ethics and medicine. Boston, Beacon Press, 1969
- Downing, A. B. Euthanasia and the right to death: the case for voluntary euthanasia. London, Owen, 1969
- Hallan, Jerome B. The economic cost of kidney disease and related diseases of the urinary system. Washington, D. C., U. S. Government Printing Office, 1970
- Hanitzsch, Eric G. The treatment of highway injury; an international bibliography. Ann Arbor, University of Michigan, Highway Safety Research Institute, 1969
- Hooper, Reginald. Patterns of acute head injury. Baltimore, Williams & Wilkins, 1969
- Horwitz, John J. Team practice and the specialist; an introduction to interdisciplinary teamwork. Springfield, Illinois, Thomas, 1970
- Kosa, John. Poverty and health; a sociological analysis. Cambridge, Harvard University Press, 1969
- The moment of death; a symposium. Springfield, Illinois, Thomas, 1969
- Pesso, Albert. Movement in psychotherapy; psychomotor techniques and training. New York, New York University Press, 1969
- Physical activity and aging; with special reference to the effect of exercise and training on the natural history of arteriosclerotic heart disease. Baltimore, University Press, 1970
- Rosenfield, Isadore. Hospital architecture and beyond. New York, Van Nostrand Reinhold Co., 1969
- Selected papers on systems for health care delivery. (Iowa City) Graduate Program in Hospital and Health Administration, University of Iowa, 1969
- Smith, Hillas. Antibiotics in clinical practice. Baltimore, Williams and Wilkins, 1969
- U. S. Food and Drug Administration. Advisory committee on Obstetrics and Gynecology. Second report on the oral contraceptives. Washington, 1969
- Wayne State University Symposium on "Impact Injury and Crash Protection," Detroit, 1969. Impact injury and crash protection. Springfield, Illinois, Thomas, 1969

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KANSAS STATE DEPARTMENT OF HEALTH
TOPEKA, KANSAS

Epidemiology & Disease Control Services—Registration & Health Statistics Services—Kansas Morbidity Incidence
Summary of Cases Reported in May, 1970 and 1969

<i>Diseases</i>	<i>May</i>			<i>January-May Inclusive</i>		
	<i>1970</i>	<i>1969</i>	<i>5-Year Median 1966-1970</i>	<i>1970</i>	<i>1969</i>	<i>5-Year Median 1966-1970</i>
Amebiasis	2	1	1	10	1	4
Aseptic meningitis	1	—	—	4	3	—
Brucellosis	—	—	—	—	1	1
Diphtheria	—	—	—	—	—	—
Encephalitis, prim., infect.	1	1	—	4	3	3
Encephalitis, post-infect.	—	—	—	—	—	—
Gonorrhea	540	451	360	2,572	1,915	1,625
Hepatitis, infectious	36	18	18	211	133	133
Measles (Rubeola)	8	1	*	53	4	*
Meningococcal meningitis	—	—	1	1	13	7
Mumps	51	19	*	139	91	*
Pertussis	—	—	—	—	—	—
Poliomyelitis	—	—	—	—	—	—
Rheumatic fever	3	—	—	4	2	2
Rubella (German Measles)	13	2	*	50	32	*
Salmonellosis	24	18	15	77	67	73
Scarlet fever	—	1	2	67	22	50
Shigellosis	5	11	5	28	30	28
Streptococcal infections	695	222	222	1,803	1,550	1,510
Syphilis	82	149	107	552	776	477
Tinea capitis	—	3	3	11	20	25
Tuberculosis	14	16	16	90	88	94
Tularemia	—	2	—	—	3	1
Typhoid fever	—	—	—	—	—	—

*Statistics not available for 5-year median.

**SMALLPOX VACCINATION
CURRENT RECOMMENDATIONS,
INTERPRETATION OF RESULTS**

Despite recent renewal of the controversy regarding the advisability of routine smallpox vaccination, this procedure remains the best available means of preventing smallpox. Smallpox is a continuing threat to all countries and is introduced to smallpox-free countries by international travelers. The most recent example of smallpox importation occurred during January 1970 in Germany; the index case had returned from West Pakistan. Nineteen secondary cases through two generations of spread have been documented. Four of these cases were fatal.

Primary vaccination is recommended during the second year of life (between the first and second

birthdays). The successful primary vaccination should always show a typical Jennerian vesicle (major reaction). The response should be interpreted six to eight days after vaccination. If no typical Jennerian vesicle is observed, the vaccination procedure should be checked and repeated without delay, using vaccine of known potency and more vigorous technique.

Revaccination is recommended at entry into elementary school, every ten years as a routine, and before going abroad. It is also recommended that medical and hospital personnel be revaccinated every three years because imported cases of smallpox are usually hospitalized for diagnosis.

Only two responses to revaccination are defined by the World Health Organization's Expert Committee on Smallpox, eliminating use of older terms such as "vaccinoid," "accelerated," and "immune." These

are "Major reaction"—a vesicular or pustular lesion or an area of definite palpable induration or congestion surrounding a central lesion which may be a crust or ulcer. This reaction indicates that virus multiplication has most likely taken place and that revaccination is successful. "Equivocal reaction"—any other reaction should be regarded as equivocal. These responses may be the consequence of immunity adequate to suppress virus multiplication or may represent only allergic reactions to an inactive vaccine. If an equivocal reaction is observed, revaccination should be repeated with vaccine of known potency.

Over fourteen million vaccinations and revaccinations were performed in the United States during 1968. From this total, Ruben¹ has documented 510 cases of serious reactions, including eight deaths. Postvaccinal encephalitis was the cause of death in four of these cases; three of these occurred in infants receiving primary vaccination during their first year of life. The remaining four deaths were caused by vaccinia necrosum; two in primary vaccinees, and two following revaccination.

It has been estimated that strict adherence to the contraindications to vaccination could have reduced the number of serious reactions by one-half. In smallpox-free countries, these are: (a) eczema and other forms of chronic dermatitis in the individual to be vaccinated or in a household contact; (b) leukemia; lymphoma; other reticuloendothelial malignancies; (c) dysgammaglobulinemia; (d) patients receiving immunosuppressive drugs such as steroids or anti-metabolites or ionizing radiation; and (e) pregnancy.

1. Complications of Smallpox Vaccination in the United States, 1968. Frederick L. Ruben, M.D. (Presented at Sixth Annual Immunization Conference, Atlanta, Georgia, March 13, 1969.)

References

- Control of Communicable Diseases in Man*, Eleventh Edition, 1970, American Public Health Association.
Report of the Committee on Infectious Diseases (1970 Red Book), American Academy of Pediatrics.
Morbidity and Mortality Weekly Report, U. S. DHEW, PHS, Vol. 19, No. 24, June 20, 1970.

Announcements

(Continued from page 332)

- Oct. 23-30 98th Annual Meeting, American Public Health Association, Houston Civic Center, Houston, Texas. For information: Mrs. Marion Paul, American Public Health Association, 1740 Broadway, New York, N. Y. 10019.
- Oct. 25-29 36th Annual Meeting, American College of Chest Physicians, Century Plaza Ho-

tel, Los Angeles. Write: American College of Chest Physicians, 112 E. Chestnut, Chicago 60611.

Oct. 30-31

2nd Annual Birth Defects Symposium, *Disorders of Glucose Metabolism in Children*, University of Florida College of Medicine, Gainesville. Write: Mrs. Betty J. Howard, Div. of Postgraduate Education, J. Hillis Miller Health Center, Gainesville, Florida 32601.

New Books Received

(Continued from page 334)

Cardiac Arrest and Resuscitation by Hugh E. Stephenson, Jr. 4th edition. Philadelphia, W. B. Saunders Company. 659 pages, illustrated. \$29.50.

Synopsis of Obstetrics by Charles E. McLennan. St. Louis, C. V. Mosby Company. 495 pages, illustrated. \$9.50.

Symposium on Cancer of the Head and Neck: Total Treatment and Reconstructive Rehabilitation. John C. Gaisford, editor. Volume II. St. Louis, C. V. Mosby Company. 381 pages, illustrated. \$31.50.

Introduction to Medical Science by Clara Gene Young and James D. Barger. St. Louis, C. V. Mosby Company. 295 pages, illustrated. \$7.95.

Atlas of Diagnostic Techniques and Treatment of Intraocular Foreign Bodies by William H. Havener and Sallie L. Gloeckner. St. Louis, C. V. Mosby Company. 1,975 pages, illustrated. \$19.50.

Crisis Fleeting. Original Reports on Military Medicine in India and Burma in the Second World War, edited by James H. Stone. Office of the Surgeon General, Department of the Army, Washington, D. C. 423 pages. \$3.75.

Your Community Hospital by Robert E. Walsh. Boston, Beacon Press. 286 pages. \$5.95.

Handbook of Ocular Therapeutics and Pharmacology by Philip P. Ellis and Donn L. Smith. 3rd edition. St. Louis, C. V. Mosby Company. 250 pages. \$10.75.

Organization and Administration of Health Care by Richard L. Durbin and W. Herbert Springall. St. Louis, C. V. Mosby Company. 248 pages, illustrated. \$9.85.

Studies in Clinical Enzymology by D. P. Mullan. St. Louis, C. V. Mosby Company. 238 pages, illustrated. \$12.00.

Diagnosis and Management of Pain Syndromes by Bernard E. Finneson. Philadelphia, W. B. Saunders Company. 337 pages, illustrated. \$12.50.

The Physician's Guide to Managing Emotional Problems by A. H. Chapman. Philadelphia, J. B. Lippincott Company. 373 pages, illustrated. \$11.00.

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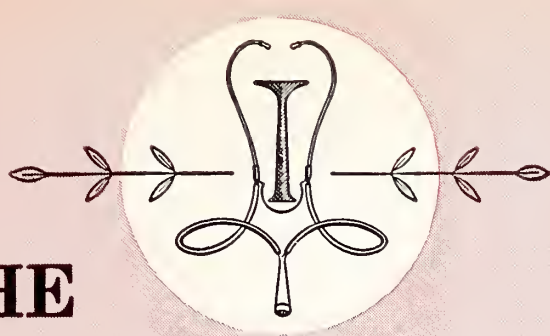
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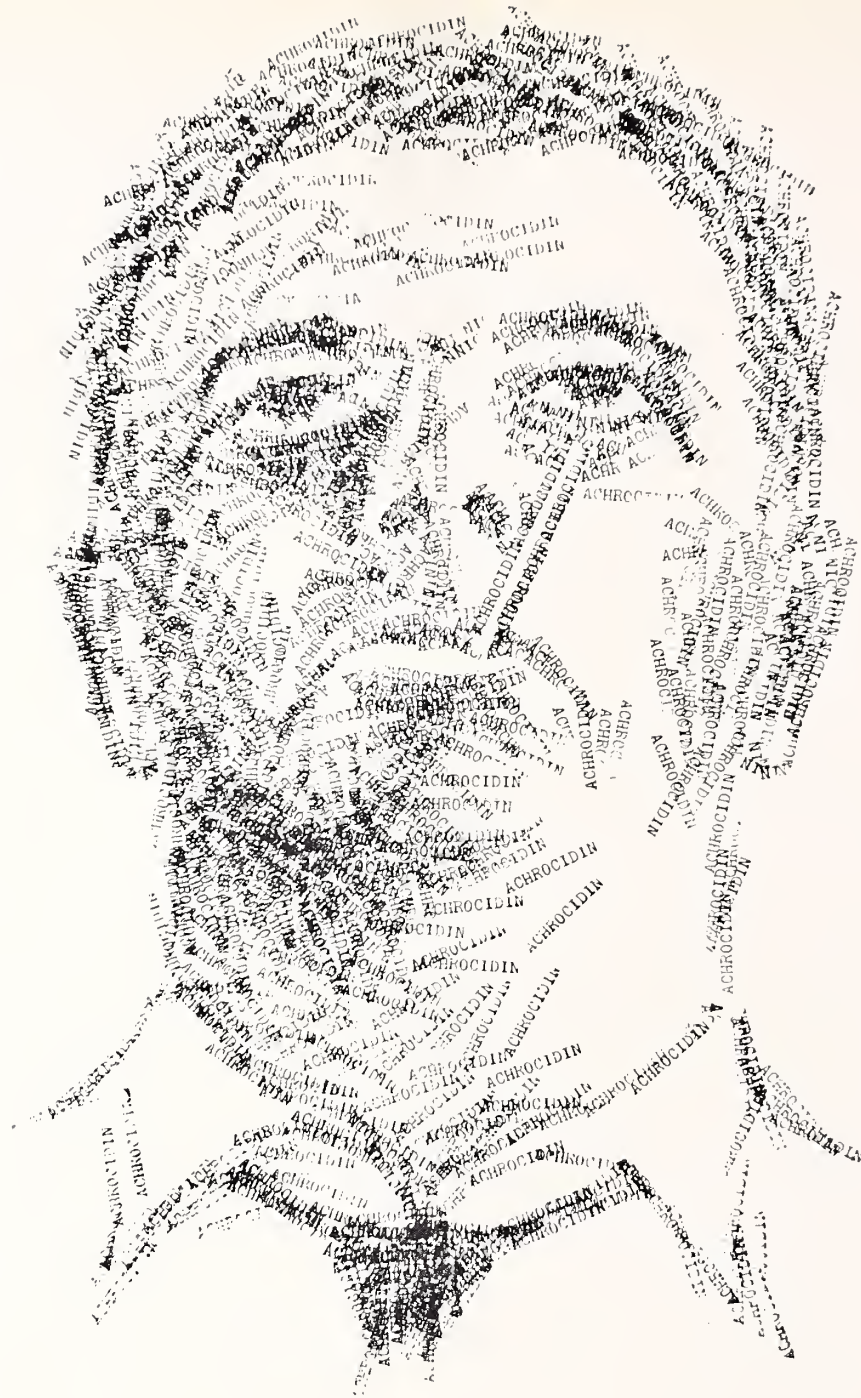
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Kansas Chapter American College of Surgeons

The JOURNAL is pleased to publish a special issue devoted to the papers presented at the annual meeting of the Kansas Chapter, American College of Surgeons held in Kansas City on October 26, 1969.



Sepsis . . .

and Septic Shock

ARLO S. HERMRECK, M.D., and
ALAN P. THAL, M.D.,* *Kansas City, Kansas*

SEPSIS REMAINS one of the most common and as yet often unsolved problems encountered by the surgeon today. Despite the development of powerful antibiotics, sepsis in the patient with a major burn, following surgery, or in the elderly often carries a risk of death. Many of these patients die from cardiovascular failure (shock, myocardial infarction, arrhythmias). Recent experimental and clinical studies have characterized the circulatory response to sepsis and septic shock and have elucidated some of the mechanisms responsible for these circulatory effects.

Diagnosis

Sepsis often presents subtly, particularly in the elderly, the very young, and in the patient on glucocorticoids, cytotoxic drugs or antibiotics. Those classic parameters such as fever, tachycardia, leukocytosis may be partially or wholly absent. Failure to aliment, a persistent adynamic ileus, unexplained weight loss, anemia, hyperventilation or that "catching facial grimace by the patient suggestive that something is wrong" are often the presenting signs and symptoms in the patient with sepsis or impending septic shock.

Once sepsis is suspected, a thorough search for the locus of infection should be carried out. The urinary tract is the most common site of infection followed closely by the respiratory tree, especially in the post-

operative period, operative wounds and sites of intravenous catheters. A recent history of instrumentation of the urinary tract, uterus, operative procedures on the biliary tract or infected regions aids in location

Sepsis due to *Staphylococcus aureus* and gram-negative bacteria is a growing threat to the hospitalized patient. Despite the use of powerful antibiotics, many of these patients die from cardiovascular failure. Recent experimental and clinical studies have elucidated some of the mechanisms responsible for the altered circulatory state in sepsis. Treatment consists of antibiotics, drainage of abscesses, frequent monitoring and support of vital organ function.

of the septic focus. Many diseases and injuries predispose to sepsis such as diabetes mellitus, cirrhosis of the liver, extensive burns, metastatic cancer, leukemias and other blood disorders. Septic shock should be suspected in any patient with unexplained hypotension, particularly if fever and leukocytosis are present.

Circulatory and Metabolic Response to Sepsis

Recent studies have thrown light on the circulatory

* Department of Surgery, University of Kansas Medical Center, Kansas City, Kansas.

Presented before Kansas Chapter, American College of Surgeons, Kansas City, Kansas, October 26, 1969.

and metabolic response to sepsis. Clowes, *et al.*^{1, 2} were the first to study extensively, both experimentally and clinically, the circulatory effects of sepsis. In general, these patients have tachycardia, mild hypotension, a cardiac output about twice normal and low total peripheral vascular resistance. Numerous other investigators^{3, 4, 5} have shown that many septic patients, even in shock, have a normal or high cardiac output associated with extreme vasodilation, while other patients in septic shock associated with hypovolemia or cardiac failure have a low cardiac output and are vasoconstricted. It is now clear that many septic patients cannot maintain the hyperdynamic circulatory state due to heart failure and hypovolemia and succumb to their septic process.

Dubois⁶ demonstrated that for each 1° F increase in temperature, oxygen requirements increase about 7 per cent. While this generalization holds for uncomplicated febrile processes, in the febrile patient with peritonitis or the burn patient with considerable evaporative water loss requiring large caloric expenditure to maintain body temperature, oxygen requirements may be considerably greater or less for a temperature change than that predicted from the Dubois relationship.^{7, 8} Sepsis is usually associated with a 10 to 30 per cent increase in oxygen demands. Cohn, *et al.*⁹ have recently demonstrated, however, that several patients with high cardiac output, low vascular resistance septic shock have an oxygen consumption below normal. Despite the increased cardiac output, the oxygen content of mixed venous blood was elevated, A-V O₂ difference was decreased and evidence of anaerobic metabolism was present (elevated lactate levels).

Recently, MacLean, *et al.*^{10, 11} have shown that most patients with sepsis and septic shock are in respiratory alkalosis. Hyperventilation and hypocarbia are often present long before the circulatory effects are seen, but this seems to be a nonspecific response in man to many forms of injury. Metabolic acidosis in septic shock is a grave prognostic sign and indicates that perfusion is inadequate and that all compensatory mechanisms to buffer pH have been exhausted. Respiratory dysfunction is also very common in sepsis frequently leading to arterial hypoxemia and exhaustion of the patient.¹²

Considerable attention has been focused on the mechanisms responsible for the increased circulatory requirements with sepsis. Initially, it was assumed that the 10 to 30 per cent increase in oxygen demands with sepsis required a comparable increase in cardiac output to transport oxygen. However, several experimental and clinical studies have demonstrated that the increase in cardiac output far exceeds that necessary to transport oxygen and meet these extra demands. This finding, along with the obser-

vation that the oxygen content of mixed venous blood in these patients is often considerably above, and the A-V O₂ difference less than normal suggests other mechanisms are at work. Albrecht and Clowes,¹ using a canine septic leg model which closely duplicated the circulatory response to sepsis seen clinically, suggested that the inflamed region behaves like a functional arteriovenous shunt and could account for high cardiac output, low peripheral vascular resistance state seen in sepsis. We¹³ used a comparable septic model in our laboratory and found that blood flow is increased through the septic region, but far below that which could account for extra blood pumped under these conditions. Of interest was the finding by us that considerable redistribution of systemic blood flow occurs with sepsis under normovolemic states. Blood flow is diverted away from nonseptic skin and skeletal muscle to the septic region, kidneys and splanchnic organs. This unique circulatory response to sepsis has been confirmed in the human recently by Gump, *et al.*¹⁴

Further evaluation in our laboratory showed that a powerful vasodilator is released into the venous blood draining the septic area. This substance has the ability to cause systemic vasodilation, high cardiac output and low peripheral vascular resistance. The nature of this vasodilator substance is not clear at present, but it does not appear to be endotoxin, bacteria or any of the common endogenous vasodilators such as histamine or plasma kinins. Recent studies suggest this substance may be a protein released from the leukocytes (endogenous leukocyte pyrogen) and other host tissues after phagocytosis of bacteria.

Uneven distribution of systemic blood flow with areas of hyperemia and hypoperfusion as observed by us could account for the observations that many septic patients show evidence of shock, anaerobic metabolism, raised oxygen content in mixed venous blood, normal or low total oxygen consumption in the face of an elevated cardiac output. Other possible explanations for this paradoxical circulatory state seen in sepsis are peripheral arteriovenous shunting with tissue hypoxia which has never been validated either experimentally or clinically, or poisoning of the respiratory enzyme system (cytochrome oxidase) by endotoxin and other bacterial products. Huckabee¹⁵ has demonstrated in the intact laboratory animal that cyanide administration increases cardiac output considerably while decreasing oxygen consumption by blocking cytochrome oxidase. Sepsis, or more specifically, endotoxin and bacteria products may result in such a metabolic block in milder form. Some individuals claim that endo and exotoxins of bacteria uncouple oxidative phosphorylation. However, if one administers an uncoupling agent such as dinitro-

phenol to an intact laboratory animal, oxygen consumption increases, body temperature rises considerably, but cardiac output falls.¹⁶ Only further studies will classify the precise metabolic deficiencies induced by sepsis.

Treatment

The primary therapy for sepsis and septic shock revolves about measures to (1) control infection (antibiotics, drainage of abscesses or excision of necrotic tissue); (2) support blood volume and re-establish the oxygen carrying capacity of blood; (3) control cardiac rate, rhythm and contractility; and (4) support ventilation. Those patients who fail to respond promptly to these measures have an extremely poor prognosis.

Antibiotics

There has been a progressive increase in the incidence of sepsis and a change in the infecting organisms over the past 25 years. Sepsis due to gram-positive organisms with the exception of *Staphylococcus aureus* are relatively infrequent, while sepsis due to gram-negative bacteria is becoming a growing threat to the hospitalized patient.¹⁷ McCabe and Jackson¹⁸ reviewed 1,845 patients with gram-negative sepsis and found *Escherichia coli* to be the offending organism in 36 per cent of the cases; *Proteus* species, 23 per cent; *Aerobacter*, 23 per cent; *Pseudomonas*, 15 per cent; and *Paracolon*, 3 per cent. Survival in this group of patients was related more to age and underlying disease, however, than the specific micro-organism responsible for the septic process.

No single antibiotic agent effective against all potential pathogens is currently available. Although therapy should never be withheld until the offending organism is identified, it is imperative that bacterial smears be obtained and cultures of blood, urine, sputum, wounds and other tissues prior to antibiotic administration. Currently, the following antibiotics and dosage are often selected as the initial drugs before positive identification and antibiotic sensitivity for the organism is available:

Cephalothin or	
Ampicillin	8-12 gm/day I.V.
Gentamicin	3- 5 mg/kg/day I.V. or I.M.

Once the offending organism has been cultured and identified, antibiotic coverage is changed according to sensitivities. It should be noted that despite in vitro sensitivity, the clinical response to a drug is the ultimate criteria of effectiveness. Should the patient fail to respond to an antibiotic within 24 to 48 hours, a careful assessment of dosage, route of administration and the infecting organisms should be

made. Occasionally, impaired renal function requires that the dosage be reduced but seldom is it necessary to use other than the optimal antibiotic because of this problem.

Drainage of Abscesses and Excision of Necrotic Tissue

The prophylactic use of antibiotics in clean surgical cases, with the exception of open heart surgery and prosthetic valve replacement, has not been shown to reduce the incidence of infection. However, prophylactic antibiotics in potentially dirty cases will markedly reduce the incidence of life threatening septic hypotension.

Abscesses, necrotic bowel and other tissues are privileged sanctuaries for bacteria. Because of the lack of blood supply, antibiotics cannot reach these regions in concentrations adequate to sterilize them. Unless drained or excised, abscesses and necrotic tissue will serve as a continuous nidus for sepsis.

Blood Volume

Inflammation alters capillary permeability and in cases of peritonitis or inflammation of other large surface bearing regions, fluid losses are considerable. Ileus with lack of fluid intake, vomiting, diarrhea and increased insensible fluid loss due to fever and hyperventilation all lead to hypovolemia in the patient with sepsis. Blood volume must be rapidly re-established with pulse rate, blood pressure, central venous pressure (CVP) and hourly urine output as guidelines to adequacy of fluid replacement. In general, if needed, fluids can be administered until the CVP reaches 10 centimeters of H₂O without causing pulmonary edema. Anemia is common in sepsis and every attempt should be made to restore the oxygen-carrying capacity of blood. Hemoglobin is responsible for transporting 99 per cent of oxygen at the partial pressures of oxygen in room air. For older patients or patients with ischemic heart disease, hemoglobin concentrations should be maintained between 12 and 15 grams per cent to reduce the possibility of myocardial hypoxia.

Ventilatory Support

With the advent of frequent blood gas measurements, it has become clear that the lung is often the most vulnerable and limiting organ in survival with life threatening injury. Characteristically, septic patients hyperventilate, have a low P_aCO₂, suffer from respiratory alkalosis and hypoxemia. Arterial oxygen tensions often fall to critical levels despite increases in inspired oxygen concentrations to 100 per cent, endotracheal intubation and placement of the patient on a respirator. The basis for this respiratory dysfunction is complex and still poorly un-

derstood. Uneven alveolar ventilation in relation to alveolar perfusion is most likely responsible for the hypoxemia. Persistent perfusion of atelectatic and fluid filled alveoli leads to a right-to-left shunt and arterial hypoxemia. Regional stiffening of lung parenchyma due to pulmonary edema results in decreased ventilation of these regions and over-ventilation of other areas. Unless perfusion is miraculously synchronized, both regionally and quantitatively with ventilation, right-to-left shunting will occur.

Treatment for respiratory dysfunction is based on measures to re-expand atelectatic alveoli, keep the airway clean and humidified, and prevent pulmonary edema. If proper oxygenation of arterial blood cannot be accomplished by oxygen administration and vigorous respiratory care, endotracheal intubation or tracheostomy and placement of the patient on a ventilator is necessary. The latter should not be delayed until the patient is exhausted and in a near agonal state. Once placed on the ventilator, frequent monitoring of blood gases is necessary to regulate tidal volume and the inspired oxygen concentration to avoid severe respiratory alkalosis and oxygen toxicity of the lungs. Inspired oxygen concentrations of 80 to 100 per cent over long periods should be avoided to prevent damage to the lungs.

Cardiac Support

The high circulatory requirements with sepsis pose a considerable burden on the cardiovascular system. This tenuous state of the circulation most likely accounts for the brittle behavior and high mortality of those septic patients who are readily tipped into shock or cardiac arrest when additional metabolic or circulatory demands are added. The tachycardia seen in sepsis is often hard to control since the rate of firing of the S-A node is directly related to temperature. In normovolemic subjects, a 1°F increase in body temperature causes an increase in heart rate of approximately 10 beats per minute. Volume support and antipyretic agents usually aid in keeping the pulse rate below 120 beats per minute.

Digitalis preparations have been shown to increase the efficiency of even normal myocardium under stress. While generalizations about routine digitalization of all septic patients cannot be made, any patient showing evidence of cardiac decompensation or with a supraventricular arrhythmia and rapid ventricular response should receive this drug.

Often despite antibiotic therapy, drainage of abscesses and removal of necrotic tissue, blood volume and respiratory support, cardiac function continues to deteriorate and adrenergic drugs must be used to tide the patient over until sepsis can be controlled.¹⁹ The mortality rate in these patients ranges from 75 to 90 per cent and this is discouraging. Nevertheless,

many patients have been saved with administration of these agents. The main hazard in the use of these drugs is that other more effective means of support such as volume loading and respiratory assistance will be ignored or slighted.

The adrenergic drugs most commonly used today can be broadly classed as predominantly cardiac stimulants and vasoconstrictors.²⁰

Isoproterenol (Isuprel) is a powerful cardiac stimulant and also causes active peripheral vasodilation. The use of this agent in the high cardiac output, vasodilated state would appear to be contraindicated since it will cause further vasodilation of the already high flow regions and aggravate the abnormal circulatory state. However, in the low cardiac output, vasoconstricted group of septic patients where myocardial depression is common, isoproterenol appears to be the drug of choice. Frequently, urine output can be augmented, blood pressure elevated and cardiac output increased. Despite the temporary improvement in hemodynamic variables, many of the patients continue to deteriorate and succumb to their septic process.

Metaraminol (Aramine) and norepinephrine (Levophed) are both powerful vasoconstrictors. At doses low enough just to maintain systolic blood pressure at 90 to 110 millimeters mercury, however, both of these agents have considerable inotropic effects on the myocardium without excessive vasoconstriction. Although the use of these agents in shock states and other abnormal circulatory states has been criticized by several investigators, it would appear that these are the drugs of choice in the high cardiac output, vasodilated septic patient whose condition is deteriorating. Hopkins, *et al.*²¹ and we²² have demonstrated that norepinephrine can decrease excessive blood flow in the hyperemic regions without further decreasing blood flow to the low flow areas. Blood pressure can be augmented, urine output maintained and the high cardiac output reduced to a more efficient level. It is important to point out that these agents must be used in titrative amounts to avoid excessive increases in blood pressure, reflex bradycardia and low cardiac output which results from the negative inotropic effects of vagal stimulation on the heart.

References

1. Albrecht, M. and Clowes, G. H. A., Jr.: The increase of circulatory requirements in the presence of inflammation. *Surg.* 56:158, 1964.
2. Clowes, G. H. A., Jr., Vucinic, M., and Weidner, M. A.: Circulatory and metabolic alterations associated with survival or death in peritonitis: Clinical analysis of 25 cases. *Ann. Surg.* 163:866, 1966.
3. Hopkins, R. W., Sabaga, G., Penn, I., and Simeone, F. A.: Hemodynamic aspects of hemorrhagic and septic shock. *J.A.M.A.* 191:731, 1965.

4. Wilson, R. F., Thal, A. P., Kindling, P. H., Grifka, T., and Ackerman, E.: Hemodynamic measurements in septic shock. *Arch. Surg.* 91:121, 1965.
5. Siegel, J. H., Greenspan, M., and Del Guercio, L. R. M.: Abnormal vascular tone, defective oxygen transport and myocardial failure in human septic shock. *Ann. Surg.* 165:504, 1967.
6. Dubois, E. F.: The basal metabolism in fever. *J.A.M.A.* 77:352, 1921.
7. Kinney, J. M. and Row, C. F.: Caloric equivalent of fever: I. Patterns of postoperative response. *Ann. Surg.* 156:610, 1962.
8. Roe, C. F. and Kinney, J. M.: The caloric equivalent of fever: II. Influence of major trauma. *Ann. Surg.* 161:140, 1965.
9. Cohn, J. D., Greenspan, M., Goldstein, C. R., Gudwin, A. L., Siegel, J. H., and Del Guercio, L. R. M.: Arteriovenous shunting in high cardiac output shock syndromes. *Surg. Gynec. Obstet.* 127:282, 1968.
10. MacLean, L. D., Mulligan, G. W., McLean, A. P. H., and Duff, J. H.: Alkalosis in septic shock. *Surg.* 62:655, 1967.
11. Duff, J. H., Groves, A. D., McLean, A. P. H., La-Pointe, R., and MacLean, L. D.: Defective oxygen consumption in septic shock. *Surg. Gynec. Obstet.* 128:1051, 1969.
12. Clowes, G. H. A., Jr., Zuschneid, W., Slobodan, D., and Turner, M.: The nonspecific inflammatory reactions leading to respiratory failure after shock, gangrene and sepsis. *J. Trauma* 8:899, 1968.
13. Hermreck, A. S. and Thal, A. P.: Mechanisms for the high circulatory requirements in sepsis and septic shock. *Ann. Surg.* 170:677, 1969.
14. Gump, F. E., Price, J. B., and Kinney, J. M.: Whole body and splanchnic blood flow and oxygen consumption measurements in patients with intraperitoneal infection. *Ann. Surg.* 171:321, 1970.
15. Huckabee, W. E.: Circulatory response to cytochrome oxidase inhibition in vivo (Abstr.). *Fed. Proc.* 19:119, 1960.
16. Huckabee, W. E.: Effects of phosphorylative uncoupling in tissues on cardiac output of intact animals (Abstr.). *Fed. Proc.* 20:131, 1961.
17. Altemeier, W. A., Todd, J. C., and Inge, W. W.: Gram-negative septicemia: A growing threat. *Ann. Surg.* 166:530, 1967.
18. McCabe, W. R. and Jackson, G. G.: Gram-negative bacteremia: I. etiology and ecology. *Arch. Intern. Med.* 110:847, 1962.
19. Thal, A. P., Brown, E. B., Hermreck, A. S., and Bell, H. H.: *Shock: A Physiologic Basis for Treatment*. Chicago, Year Book Medical Publishers, Inc. In Press.
20. Hermreck, A. S. and Thal, A. P.: The adrenergic drugs and their use in shock therapy. *Current Problems in Surgery*. Chicago, Year Book Medical Publishers, Inc. July, 1968.
21. Hopkins, R. W., Pauly, R. P., Peters, T. E., and Simeone, F. A.: Effects of levarterenol on blood flow in inflammation. *Arch. Surg.* 97:1032, 1968.
22. Hermreck, A. S., and Thal, A. P.: Effects of vasoactive drugs on blood flow and oxygen utilization in septic tissue. *Surg. Forum* 20:17, 1969.

NEW DATA INDICATES IUD MOST EFFECTIVE CONTRACEPTIVE MEANS

New clinical data presented at the recent American Medical Association Convention in Chicago indicate effectiveness rates for SAF-T-COIL, a leading intrauterine device, which are unparalleled by any other contraceptive means—mechanical or biological.

The data, presented on film, summarize three recent studies of a combined total of 3,640 patients in which pregnancy prevention rates were as high as 99.7 per cent, with removals for serious complications or infection amounting to only 0.2 per cent in one study.

The investigators whose studies were summarized in the report are Dr. H. G. Hopwood, Jr., of Arlington, Virginia, Dr. O. J. Hayes, of Louisville, Kentucky, and Drs. Betty Vaughn and Hernan Dominguez of Dade County, Florida.

In Dr. Hopwood's study, which covered 1,437 patients, a pregnancy prevention rate of 99.7 per cent was reported, with 2.4 per cent removals for reasons other than the desire for pregnancy and an expulsion rate of 1.9 per cent. (These data represent the most favorable results of any large scale study of any contraceptive means reported to date.)

Data reported by the other two investigations approached Dr. Hopwood's in effectiveness. In a study of SAF-T-COIL in 200 private practice patients, Dr. Hayes reported a pregnancy prevention rate of 99.5 per cent. Drs. Vaughn and Dominguez also reported a 99.5 per cent effectiveness rate in their study of 2,003 patients. Drs. Vaughn and Dominguez further reported that devices removed because of serious complications or infection amounted to only 0.2 per cent, with a zero pregnancy rate among 548 patients followed in their second year with SAF-T-COIL.

The film, entitled "SAF-T-COIL—Insertion Techniques and Effectiveness," also presents a detailed demonstration of an improved insertion technique which appears to have contributed to the unsurpassed success rates achieved with this intrauterine device.

Produced in color and sound, the Super-8 (mm) film will be available on a free loan basis for screenings by physicians, family planning groups, professionals in training, and para-professional groups involved in family planning activities. The film may be obtained on request to Julius Schmid, Inc., 423 West 55th Street, New York, New York 10019.

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Pheochromocytoma

Clinical Diagnosis and Management: Review of Seven Cases

CLAYTON H. DIENER, M.D., and
GEORGE J. FARHA, M.D., *Wichita*

IT HAS BEEN ESTIMATED that about 800 patients die yearly in the United States from complications of pheochromocytoma undiagnosed at the time of death.¹ This behooves the clinician to make the diagnosis before irreversible cardiovascular damage or sudden death results. The only cure for this disease is surgical excision of the tumor which results almost invariably in a dramatic cure, thus making the treatment of this disease most gratifying to the surgeon.

The purpose of this discussion is to review briefly the biological nature of these tumors and to present the clinical picture of seven cases diagnosed during the last ten years at St. Francis Hospital, Wichita, Kansas. The diagnosis of pheochromocytoma is dependent upon the physician's awareness of the imitating manifestation of the disease.

Pheochromocytoma is a tumor of chromaffin cells² which are derived from the neuro-ectoderm of mature cells of the neural crest and are developmentally related to the mature cells of the sympathetic ganglion. These tumors secrete catecholamine (norepinephrine or epinephrine) in varied but increased amounts, producing either paroxysmal or sustained hypertension and in many cases hypermetabolism and elevated blood sugar.³ They may be manifested by relatively few symptoms or an unusual variety of bizarre complaints.

The catecholamines are synthesized in the mitochondria of cells in parts of the brain, in sympathetic nerve endings, and in the adrenal medulla.⁴ Norepinephrine is the principal, if not the only, catecholamine released by the sympathetic nerves and it is the mediator of the adrenergic fibers. Epinephrine is necessary to provide a rapid physiological response to body emergencies.⁵

The symptoms of pheochromocytoma are produced by an excess of circulating potent amines. Both amines have about equal effect on fatty acid release, central nervous system stimulation and heat production, but differ considerably in their effects on the cardiovascular systems and glucose metabolism.⁶

Of the various diagnostic procedures available, when the presence of pheochromocytoma is suspected, the fluorescence of the catecholamines and their metabolites, metanephrine, normetanephrine

A brief review of the biological nature of pheochromocytomas is given. Seven cases are reported; one with an unusual location of the tumor in the chest, one diagnosed at autopsy, and five diagnosed clinically and treated successfully by surgical excision of the tumor.

and vanilmandelic acid in the 24-hour urine specimen seems to be the most sensitive test and least subject to error, establishing the diagnosis in over 90 per cent of the cases.³

Case Reports

CASE NUMBER ONE:

B.S., a 42-year-old male, was admitted in June, 1968. Several days prior to admission he had injured his right lower chest on a tree stump. A chest x-ray was taken which showed a lesion in the left upper posterior chest (*Figures 1 and 2*). He was hospitalized for evaluation of the lesion.

His admission blood pressure was 135/88 and he had a bruise over the right lower chest. Gallbladder, upper GI and lower GI radiological studies were normal. Chest x-ray showed round tumor mass in the posterior medial left upper chest. The preoperative diagnosis was neurofibroma or primary pulmonary neoplasm.

A thoracotomy was done and a 10 gram, 2.5 centimeter diameter, smooth encapsulated, grayish-blue tumor was removed from the superior sulcus over the junction of the transverse processes of 4th and 5th ribs. On permanent sections the pathologist reported a pheochromocytoma.

COMMENT

Ninety per cent of pheochromocytomas are located in the adrenal gland and the majority of extra-adrenal

Presented at the annual meeting, Kansas Chapter, American College of Surgeons, Kansas City, Kansas, October 26, 1969.



Figure 1

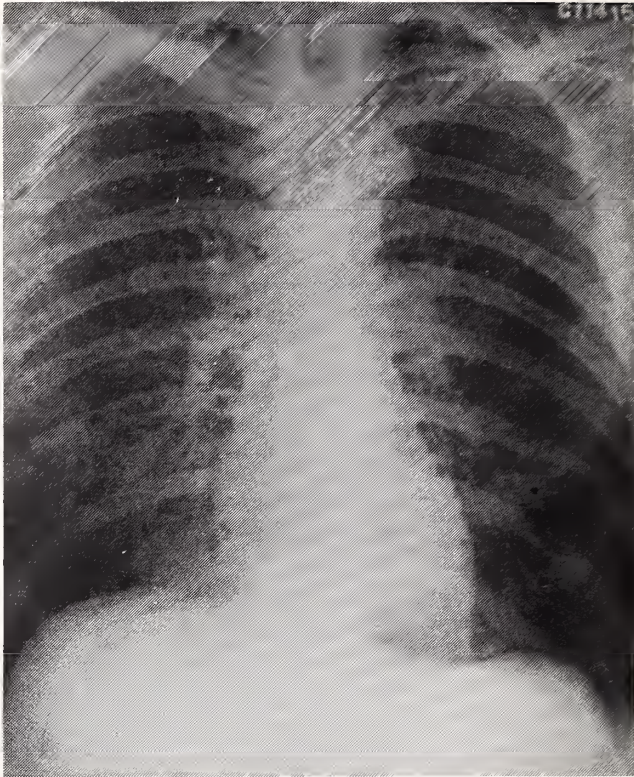


Figure 2

GLUCOSE TOLERANCE CURVES

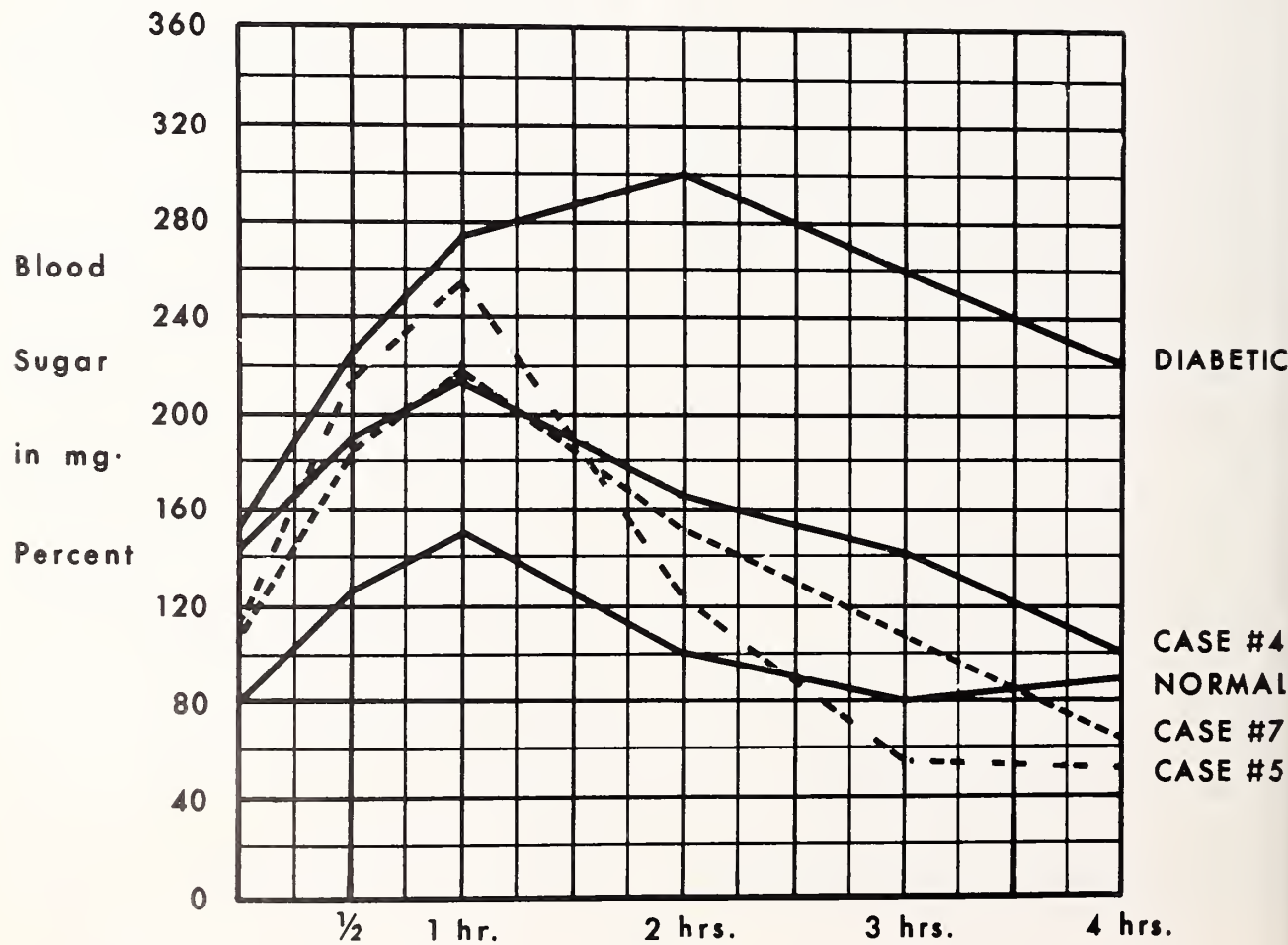


Figure 3

chromaffin tumors are found in the retroperitoneal area with less than 1 per cent found in the chest.⁷ The most common tumors of the posterior mediastinum are of nerve origin. There was no history suggestive of a functioning chromaffin tumor. There was no significant blood pressure changes during manipulation of the lesion or following its excision. The diagnosis was made by the pathologist on permanent sections. Some clues to the intra-operative recognition of these tumors may be offered by the soft consistency as compared to the more common neurologic tumors, very rich blood supply as compared to neurofibromas and cysts, and evidence of hormonal activity on manipulation of the tumors.⁸ Sodony and Hohmann in 1968,⁹ described the twenty-second case to be reported in world literature. Complete clinical information is not available on all of the 22 cases of intrathoracic pheochromocytomas¹⁰⁻¹² but four were diagnosed at autopsy and about one half of the other cases were diagnosed preoperatively.

CASE NUMBER TWO:

W.R., a 54-year-old male, was admitted in April, 1964, with a diagnosis of diabetes. Following a back injury he was examined by the plant physician who found glycosuria. There was no family history of diabetes. His admission blood pressure was 150/95. He was slightly tender over the lumbosacral spine. X-ray of the chest were negative and x-rays of lumbosacral spine showed hypertrophic spurring of L₃ and L₄. The EKG was normal. His FBS on admission was 175 milligram percent. His blood pressure during his five days of hospitalization varied from 160/92 to 120/84. He was treated with Orinase® and discharged after his fasting blood sugar had returned to normal.

He was admitted again in March, 1965, with a three months history of episodes of dizziness. The evening prior to admission he became dizzy and he ate, which didn't seem to relieve his dizziness as it usually did. He became unable to walk, talk, or stand, and was admitted to the hospital the next morning. At time of admission his blood pressure was 138/90, pulse 80, respiration 16, temperature 98.6 and blood sugar 122 milligram percent. EKG was normal. He soon became comatose and developed bilateral Babinski reflexes. Nine hours after admission his blood pressure was elevated to 210/110. He became cyanotic and expired.

The autopsy findings showed an advanced generalized arteriosclerosis with occlusion of the lumen of the basilar artery by a thrombosis, slight hypertrophy and dilatation of the heart. As a secondary finding the pathologist reported a 3 centimeter pheochromocytoma.

COMMENT

The clinical course of the patient was not unusual for that of an undiagnosed pheochromocytoma. Although the pathologist listed pheochromocytoma as a secondary diagnosis, this patient's sudden death was most likely due to a functioning chromaffin tumor. Pheochromocytomas are histologically benign tumors but physiologically malignant. Roth, *et al*,³ reported a case of pheochromocytoma that developed a basilar artery thrombosis during a hypertensive crisis. This pa-

tient's terminal event was a hypertensive crisis with autopsy finding of basilar artery thrombosis. Of the 15 cases of pheochromocytoma diagnosed at autopsy reported by Minno, *et al*,¹³ two died from a cerebral vascular accident, one at age 24 and one at 46. The diagnosis of diabetes mellitus made during the patient's first hospitalization was made on a FBS of 176 milligram percent. Many of the patients with pheochromocytoma do have an elevated FBS and abnormal glucose tolerance curves (*Figure 3*); however, the curve is not that of diabetes as has been reported.¹⁴ Since in diabetes mellitus the elevated blood sugar is due to the lack of insulin to utilize glucose but epinephrine elevates the blood sugar by activating phosphorylase in the liver and skeletal muscle, the glucose tolerance curves are not the same. Although there are a number of diseases that may have an elevated fasting blood sugar and hypertension, a differential diagnosis of the patient's hypertension may have led to the correct diagnosis during his first admission. The incidence of pheochromocytoma in hypertensive patients has been reported from 0.4 per cent to 2 per cent.^{14, 15} The yield of checking every hypertensive patient for a pheochromocytoma will be low, but making the correct diagnosis should effect a cure.

CASE NUMBER THREE:

A.J., a 65-year-old woman, was hospitalized in September, 1959, because of symptoms of obstructive jaundice. She had a history of having had several bouts of jaundice. She also gave a history of repeated episodes of high blood pressure 240-280/100-130. These episodes started about eight months prior to her admission and were characterized by headache, weakness and pain in the abdomen, chest, and legs. She denied profuse sweating. Between episodes her blood pressure would be normal.

A cold pressor test was done with a rise in blood pressure from 118/70 to 172/86 in one and one-half minutes; with histamine stimulation there was an additional rise of 40/20. After 5 milligram of regitine the blood pressure returned to normal in four minutes.

An abdominal exploration was done to correct her acute problems of obstructive jaundice due to rupture of the gallbladder by a large stone and abscess formation. A right adrenalectomy was done removing a mass, 4 x 4 x 3 centimeter, which contained a pheochromocytoma.

COMMENT

Obstructive jaundice brought this patient to the hospital. In the literature it has been reported that 30 per cent of the patients with pheochromocytoma have cholelithiasis.⁴

CASE NUMBER FOUR:

R.G., a 57-year-old woman, was admitted in September, 1961, for the second time because of rectal bleeding. Her previous admission had been in 1958, at which time her diagnoses were: rectal bleeding due to hemor-

rhoids and essential hypertension, blood pressure 160/90.

On this admission she had an additional complaint of episodes of high blood pressure accompanied with a feeling of tightness in the neck, fullness in the head, choking sensation and severe headache. Her blood pressure on admission was 140/90 and pulse 100. During her hospitalization she developed a severe pounding headache with a blood pressure of 240/100 and pulse 130. A 24-hour urine specimen of 595 cubic centimeters contained 1,600 micrograms of catecholamine. The gallbladder x-rays showed a large stone. The IVP showed a mass in the left upper quadrant depressing the kidney. She was discharged and readmitted two weeks later at which time additional diagnostic studies were done with BMR of 17 per cent above normal. Fasting blood sugar was 141 milligram per cent and glucose tolerance curve as shown on *Figure 3*.

A left adrenalectomy was done with a specimen weighing 40 grams and measuring 7 x 5 x 3½ centimeters. She had no postoperative complications. A 24-hour urine specimen of 780 cubic centimeters collected three weeks postoperative contained 49 micrograms of catecholamines.

COMMENT

This patient was admitted the second time because of rectal bleeding. It is well known that increased circulating catecholamine causes decreased mobility of the intestinal tract and constipation. This unusual manifestation of pheochromocytoma has been interpreted as Hirschsprung's disease resulting in unnecessary and hazardous operative procedures. During her first hospitalization she had an elevated blood pressure which was diagnosed as essential hypertension. According to Thomas, excessive sweating occurs in 71 per cent of patients with pheochromocytoma.¹⁸ This patient had hypertension, hyperglycemia, and hypermetabolism. Epinephrine may increase oxygen consumption 30 per cent. An increased BMR with normal specific thyroid studies suggests pheochromocytoma.¹⁷

CASE NUMBER FIVE:

W.I.C., a 41-year-old carpenter, was in good health until June, 1942, at which time he noticed a gradual onset of severe headaches which became more frequent and severe until he would awaken most every night with a headache. The headaches were often accompanied with profuse perspiration. He also noticed polyuria. He was admitted in February, 1963, with a blood pressure of 190/100, and a pulse of 80. Fundoscopic examination showed minimal A-V nicking. The aortic second sound was greater than second pulmonic sound.

The EKG, chest x-ray, and IVP were normal. Fasting blood sugar was 110 milligram per cent and glucose tolerance curve as shown on *Figure 3*. The 24-hour urinary catecholamine was 1,490 micrograms. A regitine test was done with a beginning blood pressure of 190/100 and 30 seconds after injection of Regitine® the blood pressure dropped to 140/90. Blood volume stud-

ies were done and patient's total volume was 3,740 milliliters with an estimate volume of 5,200 milliliters. The red cell volume was 1,800 milliliters and plasma volume 1,950 milliliters with estimated volumes being 2,300 milliliters and 2,800 milliliters respectively.

The arterial pressure was monitored directly during surgery. During the induction with Pentothal®, cyclopropane, Anectine® and curare, the blood pressure rose from 210 to 300. After changing from cyclopropane to fluothane and giving Regitine® IV, the blood pressure decreased to 140. A fairly stable pressure was maintained during the procedure until the tumor was removed, at which time it dropped to 95.

The right adrenal was removed and contained a mass measuring 3 x 3 x ½ centimeters with a histological diagnosis of pheochromocytoma. A 24-hour postoperative urine catecholamine was 64 milligrams.

COMMENT

This patient had the two most common symptoms of pheochromocytoma,¹⁶ repeated episodes of headache with profuse perspiration for 20 years before the diagnosis was made. Blood volume studies were done showing a total blood volume of 73.5 per cent of the actual estimated volume. It has been demonstrated experimentally that an increase in circulating catecholamines does cause an increase in hematocrit, decrease in plasma volume, and no change in red cell mass.¹⁸ The hematocrit was increased, plasma volume decreased, but also a decrease in red cell mass as compared to the actual estimated values. It is most important to restore and maintain normal blood volume to reduce the danger of profound hypotension once the hormone secreting tumor has been removed.¹⁹

CASE NUMBER SIX:

M.H., a 48-year-old woman, had her third admission in April of 1968. This admission was because of chest pain, tachycardia, and dyspnea. She had just completed a nine hole round of golf when suddenly she experienced the onset of the attack. She gave a history of repeated attacks, usually several times a month, of pain in the back of her head, chest pain, weakness, nausea and vomiting, sweating and occasionally pain in all four extremities.

She had been hospitalized in October, 1963, for evaluation of headache, chest pain and tachycardia. She had had three episodes in the past year and the last one began the night before her admission. Her husband gave her quinidine which he had for rapid pulse rate. Her two previous episodes were similar, only accompanied with nausea and vomiting. Her blood pressure on admission was 114/90, pulse 100, temperature normal. Protein bound iodine was 6.7 micrograms. waves over the entire heart. Serial enzyme studies were normal. Protein bound iodine was 6.7 micrograms. She was discharged with the diagnosis of subendocardial infarction and hypertensive crisis. During that hospitalization a consultant suggested that it might be helpful to get a determination of 24-hour urine catecholamines but that was not done. She was again

hospitalized in February, 1967, because of sudden onset of severe headache, precordial pain and dyspnea, while she was watching a television program. Her blood pressure on admission was 120/90. The chest x-ray showed an area suggestive of acute interstitial pneumonitis. Her final diagnosis was atrial tachycardia due to pneumonitis.

Her family history was negative except that her mother had migraine headaches.

Cold pressor and histamine tests were done with a beginning blood pressure of 110/70, after one minute of cold water 130/80 and two minutes after histamine injection 150/100. During the next two weeks, five different 24-hour urine catecholamine and VMA determinations were done with the highest value catecholamine being 451 micrograms and VMA 11.8 milligrams. The glucose tolerance curve was normal. Blood volume studies were normal. On excretory urogram a large tumor mass situated in the right suprarenal area causing a depression of the kidney was reported by the radiologist.

The patient was discharged to be readmitted two weeks later for surgery. Prior to surgery a selective renogram was done showing a tumor stain in the area of the right adrenal. During the arteriogram her blood pressure rose to 220/120 and she complained of a severe headache. Regitine® was given and in several minutes the blood pressure was 130/80. At surgery a right adrenalectomy was done removing a mass weighing 62 grams with a histological diagnosis of pheochromocytoma.

COMMENT

This patient's complaints and EKG findings kept the attending physician so preoccupied with the possibility of primary heart disease that the diagnosis of pheochromocytoma was not made until the third admission, although the consultant suggested on her first admission that a 24-hour urine catecholamine determination might be helpful. Angina does occur in patients with pheochromocytoma.⁴ During her second admission the radiologist's report of an area suggestive of acute pneumonitis was used to explain the tachycardia. Repeated urinary catecholamine and VMA determination established the diagnosis during the third admission.

Although the excretory urogram showed a right suprarenal mass, a selective renogram was done, which caused a hypertensive crisis every time a little dye was injected. This was controlled with Regitine®. If the lesion can be localized by other means, the hazards of selective renogram probably are not justified.²⁰ Retroperitoneal injection of CO₂ may be helpful in revealing a tumor situated in the suprarenal space.²¹ This, combined with aortography, may give excellent visualization of a suprarenal mass. It should be kept in mind that any roentgenographic examination for pheochromocytoma may provoke a paroxysm of hypertension.²²

CASE NUMBER SEVEN:

D.P., a 46-year-old woman, was admitted the third time in August, 1968, with diagnosis of possible coronary.

She was hospitalized in July, 1968, for diagnostic studies because of severe headaches which began several months previously and had become progressively more severe and accompanied with nausea and vomiting. Her admission blood pressure was 110/68. Skull x-rays, echo encephalogram, and spinal puncture were done with normal findings. The electroencephalogram was reported as abnormal. Her final diagnosis was cephalgia.

On July 14, 1968, she was seen in the emergency room because of headache and vomiting. Her blood pressure was 96/60, pulse 100, temperature 97.6. An EKG done one week after admission showed changes suggestive of recent anterior wall damage. She was followed by several EKGs which showed no progression of the ischemic changes. Fasting blood sugar was 106 milligrams per cent and glucose tolerance curve as shown on *Figure 3*.

On August 14, 1968, she was discharged with final diagnosis of headache, etiology undetermined, and abnormal EKG. Before she was discharged a 24-hour urine was collected for determination of catecholamine and VMA which was reported after her discharge. The 24-hour catecholamine was 144 micrograms and VMA 7.4 milligrams.

She returned to the emergency room one week later, complaining of burning in her chest radiating into the neck. She was admitted to the cardiac care unit and again the EKG showed diffuse ST segment changes. A 24-urine total catecholamine was 1,042 micrograms with 544 micrograms epinephrine and 498 micrograms of norepinephrine and VMA 7.8 milligrams. The IVP reported suggestion of mass over the upper pole of the left kidney. At surgery a 6 centimeter cystic mass, weighing 75 grams, which contained a pheochromocytoma with recent old hemorrhage and cystic formation was removed from the left adrenal area. Two days following surgery the EKG was normal. Two weeks after surgery a 24-hour urine catecholamine was 25 micrograms and VMA 6.2 milligrams, and the glucose tolerance curve had returned to normal.

COMMENT

The initial admission of the patient was far the most common complaint of a patient with pheochromocytoma, but no hypertension was noted during the hospitalization. She had diagnostic studies for her headache and was discharged with a nonspecific diagnosis of cephalgia. Attention during her second admission was centered largely around EKG changes and again no hypertension was noted. Although she was again discharged with nonspecific diagnosis of headache, etiology undetermined, and an abnormal EKG, the possibility of pheochromocytoma was considered. Her next admission was to the Cardiac Care Unit because of chest pain and EKG changes. This time the diagnosis of pheochromocytoma was confirmed by urinary catecholamine determination.

Management

Although surgical excision is the only cure for the disease, there are two serious hazards related to sur-

gery. First, extreme rise in blood pressure and cardiac arrhythmia may occur during induction of anesthesia or during manipulation of the tumor due to excessive discharge of pressor hormones.^{22, 23} Second, a rapid fall in blood pressure may occur following the resection of the hormone-producing tumor. Presurgical control of the hypertension may help reduce the danger of these difficulties. Regitine® 50 milligrams orally every four hours or six doses or continuous intravenous Regitine® can be started 24 hours prior to operation to restore and maintain the blood pressure at normal levels. A good concentration is 5 to 10 milligrams regitine in 500 m.^{24, 25} five per cent dextrose in water. This can be continued until the tumor has been excised to minimize the danger of hypertensive crisis. It is essential to have absolute control over monitoring of the blood pressure and the administration of drugs, fluid and blood for balancing the pressure during the procedure and immediately post-operatively. Hypertension can be controlled with Regitine®. Replacement of blood loss is very important to avoid marked hypotension following excision of the tumor.

The proper choice of anesthetic agents will decrease the hazards of the functioning tumor. Since carbon dioxide retention and hypoxia are both prime stimulants of catecholamine secretion, hypoventilation must be avoided.²⁵ Cyclopropane causes an increased secretion of epinephrine and norepinephrine and also sensitizes the myocardium and peripheral vessels to those hormones. Curare is undesirable because it releases histamine. Fluothane does not stimulate catecholamine secretion and renders the peripheral vessels less responsive to norepinephrine, however, it does sensitize the myocardium to those hormones causing arrhythmias. Lidocaine, intravenous injections of 100 milligrams, has been successful in controlling recurrent arrhythmia.²⁴

Since 10 per cent of the pheochromocytomas are bilateral and 10 per cent are located in extra-adrenal sites, the transabdominal approach has become popular. Many surgeons use a transverse incision facilitating the exploration of the unsuspected adrenal first. If possible, it is best to ligate the vein first to avoid increasing the blood level of catecholamine during manipulation of the adrenals.

Immediately following excision of the tumor the patient must be observed carefully because profound hypotension may suddenly occur. Blood volume must be maintained and vasopressor agents are often needed. If bilateral pheochromocytomas have been removed, adrenocortical insufficiency may occur in the early postoperative period and steroid replacement therapy must be readily available.

References

1. Newton, T. H.; Smith, G. I.; Kalb, F. O. and Smith, D. R.: Successful use of regitine (Phentolamine) in the diagnosis and surgical management of a case of pheochromocytoma. *New Eng. J. of Med.* 252:974-979, June 1955.
2. Hatch, F. N.; Richards, V. and Spiegel, R. J.: Adrenal medullary tumor (Pheochromocytoma). *Amer. J. Med.*, Vol. 6, Jan.-June 1949.
3. Roth, G. M.; Flock, E.; Kvale, W. F. and Waugh, J. M.: Pharmacologic and chemical tests as an aid in the diagnosis of pheochromocytoma. *Circulation* 21:769, 1960.
4. Page, L. B. and Copeland, R. B.: Pheochromocytoma. *Disease-a-Month*, January 1968.
5. Harper, H. A.: *Review of Physiological Chemistry*. 11th Edition, Los Altos, California; Lange, 1967.
6. Ganong, W. F.: *Review of Medical Physiology*. 3rd Edition, Los Altos, California; Lange, 1967.
7. Graham, J. B.: Collective review pheochromocytoma and hypertension: An analysis of 207 cases. *Intern. Abstr. Surgery* 92:105-121, February, 1951.
8. Cueto, J. D.; McFee, A. S. and Bernstein, E. F.: *Diseases of the Chest* 48(5):539-442, November 1965.
9. Sadony, Von V. and Hohman, H.: Das Intrathorakale Phaochromozytom. *Zentralblatt für Chirurgie* 93(37):1308-1317, April 1966.
10. Downs, A. R. and Schoemperlen, C. B.: Intrathoracic pheochromocytoma. *Canad. J. of Surg.* 9:180-183, April 1966.
11. Lune, R.; Katz, I. and Ernst, R. W.: Intrathoracic pheochromocytoma. *Archives of Surg.* 87(3):369-373, September 1963.
12. Pampari, D. and Lacerenza, C.: Intrathoracic pheochromocytoma. *J. of Thoracic Surg.* 36(2):174-181, August 1958.
13. Minno, A. M.; Bennett, W. A. and Kvale, W. F.: Pheochromocytoma: A study of 15 cases diagnosed at autopsy. *New Eng. J. Med.* 251:959-965, December 1954.
14. Smithwick, R. H.; Greer, W. E.; Robertson, C. W. and Wilkins, R. W.: Pheochromocytoma. *New Eng. J. of Med.*, 242(7):252-257, February 1950.
15. Kvale, W. F.; Roth, G. M.; Manger, W. M. and Priestley, J. T.: Present day diagnosis and treatment of pheochromocytoma. *JAMA* 164:854-861, 1957.
16. Thomas, J. E.; Rooke, D. and Kvale, W. F.: The neurologist's experience with pheochromocytoma. *JAMA* 197:754, July-Sept. 1966.
17. Preston, F. W. and Beal, J. M.: *Basic Surgical Physiology*. Chicago: Yearbook Publishers, 1969.
18. Finnerty, F. A.; Buchholz, J. H. and Guillaudea, R. L.: The blood volumes and plasma protein during levarterenol induced hypertension. *J. of Clin. Invest.* 37:425-429, March 1958.
19. Greer, W. E.; Robertson, C. W. and Smithwick, R. H.: Pheochromocytoma: diagnosis, operative experience, and clinical results. *Am. J. Surg.* 107:192, 1964.
20. Rosenberg, V. and Varco, R. L.: Physiologic and pharmacologic considerations in the management of pheochromocytoma. *Surg. Clinics of N. Amer.* 47:1453-1460, December 1967.
21. Scott, W.; Riddell, D. H. and Brockman, S. K.: Surgical management of pheochromocytoma. *Surg. Gynec. & Obst.* 120:707, 1965.
22. Weldon, V. V.; Weldon, C. S. and Zuidema, G. D.: The biochemical basis of adrenal surgery. *Surg. Clinics of N. Amer.* 49:688-691, June 1969.
23. Steinwald, J.; Osmar, P.; Doolas, A. and Southwick, H. W.: Pheochromocytoma. *Surg. Clinics of N. Amer.* 49:87, February 1969.
24. Pertsemlidis, D.; Gitlow, S. E.; Siegel, W. C. and Kark, A. E.: Pheochromocytoma. *Annals of Surg.* 169:376-385, March 1969.
25. Crandell, D. L. and Myers, R. T.: Pheochromocytoma—anesthetic and surgical considerations. *JAMA* 187:12-16, January 4, 1964.

Myocardial Revascularizations

Current Status and Surgical Technique

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REVASCULARIZATION of the myocardium is one of the most challenging problems to the surgeon. Coronary atherosclerosis accounts roughly for 50 per cent of the deaths in the United States each year and there is every reason to believe that its incidence is increasing. Approximately one million Americans experience myocardial infarction annually.⁶ Obviously, the solution to the problem is complete understanding of its pathogenesis, enabling prevention and reversal to be accomplished. Until such data is available, surgical means of enhancing myocardial blood flow continues to be of great importance.

Revascularization procedures have produced increasing degrees of enthusiasm since the pioneering work of Beech and O'Shaughnessy. In 1946, Dr. Vineburg¹⁰ stimulated renewed interest in myocardial revascularization utilizing the internal mammary artery. It is of vital importance to know that leading proponents of this procedure are well recognized cardiologists who have provided excellent postoperative evidence of improvement in the coronary circulation; increased coronary blood flow; and improved myocardial metabolism.^{5, 8} Successful revascularization utilizing internal mammary artery has been proven by cine-coronary angiography; flow meter determinations; radioactive isotope studies; lactic acid extraction ratio; and many other scientific parameters which are too many to discuss now.^{2, 7-11} That these implants will not remain patent in the normal non-ischemic heart has also been experimentally demonstrated.⁹

A variety of operative procedures have been proposed to treat ischemic heart disease. In summary, they all fall into three categories: direct, indirect, and a combination of both. Primarily, the internal mammary artery implantation—unilateral or bilateral—is the most popular and feasible one because of the diffuse nature of the disease. However, direct aorto-coronary shunt with or without implantation of the internal mammary artery offer instantaneous revascularization which is not obtained from the Vineburg procedure alone.⁴

The convincing postoperative studies in the literature^{2-4, 8, 11} have demonstrated the validity of the operation and prompted us to embark on the clinical series of 30 patients reported here. We have not believed it justified to subject all of our patients to the hazards and inconvenience of postoperative

Thirty patients had internal mammary artery implantation—five unilateral and 25 bilateral—in a single community hospital in Wichita, Kansas, during a period of two years. Mortality, morbidity, and results compare favorably with national figures. Our operative mortality is 3.3 per cent. We favor bilateral internal mammary artery implantation and we are enthusiastic about myocardial revascularization procedures utilizing the internal mammary arteries. However, direct myocardial revascularization procedures with or without extra-corporeal circulation in selected cases is the procedure of choice. We agree that myocardial revascularization procedures are not the answer to coronary atherosclerosis, but for the present they seem to answer a real need.

arteriograms. Our follow-up is short and dates back to July, 1967; however, our clinical impression—both cardiologists and surgeons alike—is encouraging and we are enthusiastically continuing to offer the operation to an increasing number of patients.

Diagnosis

The diagnosis of ischemic heart disease is often easily determined on clinical grounds, but selective coronary angiography with left ventricular angiograms and measurement of the end diastolic pressure in the left ventricle are essential for a more accurate assessment of the disease with good intra-operative management.

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Indications and Contraindications

Indications and contraindications vary among different groups. Most agree that patients first should be proven to have significant disease as demonstrated by selective coronary angiography. Incapacitating angina refractory to medical management should also be present. The presence of multiple myocardial infarcts (especially in patients under 50 years of age) constitutes a good indication. Other than recent myocardial infarction, there are few absolute contraindications to surgery, though patients with hypertension, diabetes, or congestive heart failure are clearly poorer operative risks.

Procedures

Early in our experience, we did unilateral internal mammary artery implantation utilizing the classical original Vineburg technique.¹⁰ As our experience enlarged, we now do pretty exclusively bilateral internal mammary artery implantation in the anterior and posterior wall of the left ventricle via median sternotomy incision as described by Favolora,³ with a pump stand-by. Both internal mammary arteries including the vein, the fascia, and the muscle around them are freed up from the second rib down to its entrance into the rectus muscle which is split, thus obtaining additional length. The terminal portion of the arteries are cleaned off completely for a short distance to fit the tunnel. The terminal end is ligated (leaving side branches open) and transfixed in the distal tunnel. The tissue surrounding the artery outside the tunnel is transfixed to the proximal portion of the tunnel, thus preventing slippage of the implant. In addition, we do a seropericardiectomy and epicardiectomy.

Results and Complications

We have done five unilateral internal mammary artery implantations with no mortality and morbidity except for one simple wound infection. Among our 25 patients with bilateral implants we have had one death. This was a 58-year-old male, who on the evening of surgery died suddenly, presumably, from either myocardial infarction or pulmonary embolus. Autopsy was denied. A second patient, a 50-year-old male, was brought to the emergency room four months postoperatively. He was dead on arrival. Postmortem examination showed massive bilateral renal artery thrombosis. Studies done by the cardiologists on the removed heart showed the implanted arteries to be completely patent with excellent visualization of the coronary arteries that were not seen before with excellent communications and perfusion. A third patient, a 48-year-old female, died nine months postoperatively from massive cerebrovascular accident, sustained in the cardiac catheterization laboratory

in an attempt to visualize the implanted internal mammary arteries. Postmortem studies showed patency of the implants with excellent intercommunicating channels. This patient was asymptomatic postoperatively and her death is clearly not related to her surgery.

All of our surviving patients have improved impressively, except for one with a unilateral implant who is still quite symptomatic and extremely difficult to evaluate. Another one of our patients still needs occasional nitroglycerin. This patient was totally disabled preoperatively and now is gainfully employed as an engineer.

Complications have been very few. One patient developed congestive heart failure which responded well to medical therapy. Another patient had to be re-operated the day of surgery for control of bleeding from one of the myocardial tunnels. The average hospital stay has been twelve days, being shorter for the unilateral implants.

References

1. Effler; *et al.*: Increased myocardial perfusion by internal mammary artery implant. *Annals of Surgery* 158:526, 1963.
2. Effler, Sones, Grover, and Suarez: Myocardial revascularization by Vineburg's internal mammary artery implant. *Thor. and Card. Surg.* 50:527, 1965.
3. Favolora: Double internal mammary artery implants. *Journal of Thor. and Card. Surg.* 55:457, 1968.
4. Favoloro, R. G.: Combined simultaneous procedures in the surgical treatment of coronary artery disease. *Annals of Thor. Surg.*, Vol. 8, Number 1, July, 1969.
5. Gorlin, R. and Taylor, W. T.: Selective revascularization by internal mammary artery implant. *N. Eng. J. of Med.* 275:283, 1966.
6. Sebaston, David E.: Postgraduate course on cardiovascular surgery. American College of Surgeons, 55th Annual Congress.
7. Sebaston, *et al.*: Experimental study of the fate of arterial implants in the left myocardium. *Annals of Surgery* 145:927, 1957.
8. Sones, F. M. and Shirley, E. K.: Cine coronary arteriography. *Modern Concepts Cardiovascular Disease* 31:725, 1962.
9. Tschopp, *et al.*: Physiologic studies on revascularization of the dog heart. *J. Thor. and Card. Surg.* 55:467, 1957.
10. Vineburg, A. M.: Development of an anastomosis between coronary vessels and a transplanted internal mammary artery. *Canadian Med. Assn. J.* 55:117, 1946.
11. Wakabayashi, A., and Connally, J. E.: Comparative flow studies of myocardial revascularization grafts. *J. Thor. and Card. Surg.* Vol. 56, Number 5, 1968.

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Prepyloric Antral Stenosis

Report of a Case With Muscular Hypertrophy and Mucosal Web

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STENOTIC LESIONS of the distal stomach in the newborn and infant are rare. Hypertrophic pyloric stenosis has been well described and the Fredet-Ramstedt pyloromyotomy as its treatment is firmly established. However, there are increasing reports of more perplexing lesions in the antral area. Probably the first case of prepyloric antral stenosis was reported by Bonner. This case was that of a four-week-old with pyloric obstruction treated with a gastroenterostomy. The child died and an autopsy showed hypertrophic pyloric stenosis and a mucosal fold occluding the antrum. Since that time, approximately 24 neonate and infant cases have appeared in the literature. Surgical correction has been varied and frequently unsuccessful. This presentation introduces into the schema a case of hyperplastic antral stenosis associated with a small antral mucosal band.

Case Report

A 10-week-old male infant was admitted to St. Francis Hospital because of incessant vomiting with feedings. Since age six weeks, this youngest of five healthy siblings could only tolerate fluids. The mother recalled that she seemed "awfully big" and was told she had excessive fluid "on her stomach" at the full-term spontaneous delivery. Initial examination and laboratory studies were not impressive. Two barium swallows were performed and were interpreted as "not typical appearance of pyloric stenosis." A third barium swallow (*Figure 1*) with videotape and cineographic study then demonstrated an area of persistent concentric narrowing 2.5 centimeters proximal to the pylorus.

Operative exploration showed a normal pylorus and a prepyloric antral thickening. A 5 centimeter anterior longitudinal incision was made across the antrum, pylorus, and proximal duodenum. A posterior wall, band-like mucosal structure was noted. This was excised. Microscopic examination showed this to be

"pyloric mucosa with some muscular element." A Heineke-Mikulicz pyloroplasty was then performed.

The infant did well postoperatively and tolerated liquid feedings well by the fifth postoperative day. There was no further incidence of emesis. A one-week and one-month (*Figure 2*) postoperative barium swallow showed no residual obstruction.

A case of antral stenosis with muscular hypertrophy and a mucosal web is presented. Etiologic considerations favor either vascular insufficiency or failure of recannulation of the gut to produce these local defects. A correct preoperative diagnosis is essential and frequently may depend on a cineographic study of the area involved. Surgical correction has been varied and guidelines are proposed to effect a cure.

Discussion

Consideration of these antral lesions engenders a differential diagnosis of redundancy of gastric ulcer scar, ectopic smooth muscle, hypertrophy of rugal fold, heterotrophic pancreatic tissue, muscle spasm, mucosal membrane and others.

The classic symptom of hypertrophic pyloric stenosis and antral stenotic lesions is bile-free vomitus. This symptom does not necessarily occur immediately after birth. There are approximately 40 cases of antral membrane disease reported in adults. Most feel that these stenotic lesions were present at birth and finally appeared secondarily to other conditions, such as an ulcer with inflammation and edema. The well-defined and regular nature of the antral diaphragm associated with excessive rugal folds is described by Sames, as additional support of a congenital origin.

The prevalent theory of the etiology of these lesions is based on Tandler's work in which he showed that the duodenum passes through a solid stage during embryonic life. He proposed that a failure of revacuolization of this stage could produce the various stenotic and atretic lesions. However, there has been a more recent revival of the theory of vascular in-

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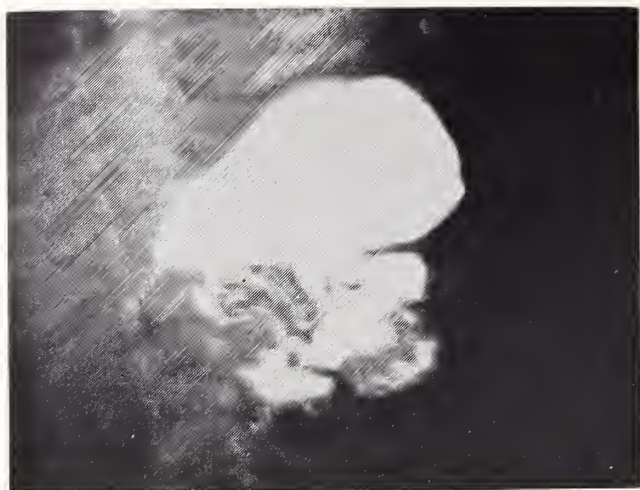


Figure 1. Barium swallow showing the persistent concentric narrowing 2.5 centimeters proximal to the pylorus.

sufficiency to explain the pathology. Louw, in an excellent report, offers convincing experimental evidence that interruption of the vascular supply to the fetal bowel may produce the entire spectrum of intestinal anomalies ranging from atresia to stenosis.

The case presented here cannot be labeled hypertrophic pyloric stenosis or strict antral membrane disease. It may be a hybrid related at least in its dynamics to pyloric stenosis. Work by Friesen and others has demonstrated an arrest rather than degeneration of the ganglion cells in the pyloric area in infants with hypertrophic pyloric stenosis. This is thought to lend credence to the thesis that motor overactivity precedes the development of work hypertrophy. Other theories of muscular or autonomic nervous system imbalance have been proposed. The causative relationships have not yet been demonstrated, however. A similar process could prevail in adjacent areas such as the gastric antrum. The small posterior wall mucosal web in the present case is further reflection of the anomalous development. It is interesting to speculate that the "excessive swelling" noted by the mother could have been hydramnios which has on occasion been noted to occur with alimentary tract obstruction.

The preoperative differentiation of hypertrophic stenosis from antral membranes and stenosis is primarily the responsibility of the radiologist. The



Figure 2. One month postoperative barium swallow showing no residual obstruction at the prepyloric area.

"olive" of pyloric stenosis is palpable in only 70-80 per cent of cases. Also, false-positive masses have been described in 5 to 20 per cent of cases. The symptoms of hypertrophic pyloric stenosis and antral stenosis are generally identical. The typical persistent knifelike filling defect of an antral membrane has been well demonstrated. Likewise, the classic radiographic hypertrophic pyloric stenosis findings of "tit," "shoulder," "beak," "mushroom," "string" and "double tract" sign are frequently present. However, as in the present case, a cineographic study has proven to be invaluable for an accurate preoperative diagnosis. An interesting case is presented by Sokol, who confirmed the iris-like antral membrane preoperatively with a gastric fibroscopic examination.

The surgical correction of these lesions has varied from simple biopsy to gastric resections. A brief review of the reported cases of antral membrane disease in infants implies that a small Heineke-Mikulicz pyloroplasty with incision of the web is the preferred treatment. This was the procedure done in the present case. A myotomy mucosal-sparing procedure in this antral hypertrophied area could miss an underlying mucosal membrane since this can usually only be detected by a gastrotomy or duodenotomy.

EDITOR'S NOTE: The list of references is not printed here because of its length; however, a copy of the reference list may be obtained by writing the Journal, 1300 Topeka Avenue, Topeka, Kansas 66612.

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Symptomatic Hiatus Hernia—

—Surgical Treatment Without Regard for the Esophageal Hiatus

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THE SURGICAL TREATMENT of hiatus hernia has been a disappointment to many patients and surgeons. The purpose of this paper is to present a simplified surgical procedure for the treatment of symptomatic hiatus hernia. The approach is unorthodox, and although this report is based on a total of 12 cases covering a two-year period, the initial results are so encouraging that they warrant a preliminary report.

Multiple surgical procedures have been described for the repair of hiatus hernia.¹⁻⁵ Arguments have continued regarding the proper approach, abdominal or thoracic. The abdominal approach is considered more satisfactory in allowing exploration for additional disease conditions such as duodenal ulcer and cholelithiasis. The thoracic approach is necessary in esophageal stenosis, suspected malignancy, or coexistent thoracic disease. The problem lies in the wide variety of surgical treatments that have been proposed and used for repair of hiatus hernia. Each has represented a laborious technical exercise for the surgeon and considerable morbidity for the patient. Faced with these complicated surgical prospects and their questionable results, many physicians prefer to avoid surgical treatment of hiatus hernia and merely advise patients to lose weight, elevate the head of the bed, follow bland diet regimes, and continue to live with their distress.

Recently, interest has centered on esophageal reflux with esophagitis as the basic complication of hiatus hernia. Symptomatic hiatus hernia results from regurgitation esophagitis.⁶ An incompetent esophagogastric sphincter allows this regurgitation. Many people live with an asymptomatic hiatus hernia because reflux esophagitis is absent or the volume of reflux is not sufficient to produce esophagitis. If reflux is present, however, small hernias can produce symptoms identical with large hernias. The reflux is usually acidic, although an alkaline gastric juice will also produce an inflamed esophageal mucosa. The volume of gastric juice refluxing into the distal esophagus

appears to be the primary basis for esophagitis. If esophagitis continues, pain, ulceration, hemorrhage, and stricture formation are inevitable. Surgical correction of this situation is mandatory.

Both Nissen^{7, 8} and Thal^{9, 10, 11} have described procedures to create a competent valve in the esoph-

A surgical procedure has been presented for the treatment of symptomatic hiatus hernia. Although it is somewhat unorthodox since it does not attempt to close the hernia defect, the basic problem of reflux esophagitis is treated effectively. Creation of a new esophagogastric sphincter and diminution of gastric acidity are the physiologic principles on which the surgical procedure is based.

The objective and subjective results have been uniformly good in the small series of patients reported here. As a consequence we believe that this physiologic approach may help the surgeon avoid the technically difficult problem of hiatal closure with its attendant morbidity and frequent recurrence. Hopefully, more people with symptomatic hiatal hernias can be offered definitive surgical treatment with a lower risk and higher rate of cure.

agogastric juncture to prevent reflux. Berman⁴ has added his support for the creation of this valve mechanism. In these recent procedures, however, the defect in the esophageal hiatus is closed, thereby continuing the need for arduous technical dissection in an area notoriously difficult for safe maneuver.

Based on the foregoing observations that the real problem in symptomatic hiatus hernia is not the hernia itself but secondary esophagogastric incompetency, regurgitation and esophagitis, a new surgical approach

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was adopted. The method emphasizes the necessity of decreasing the concentration volume of gastric secretion and the formation of a new esophagogastric sphincter anchored within the abdominal cavity. No attempt is made to close the esophageal hiatus.

Methods and Materials

Twelve consecutive patients with symptomatic hiatus hernias were seen by us during a two-year period and were treated surgically. The results of their treatment provide the basis for this report.

Each patient had x-ray evidence of a significant hiatus hernia and symptoms of gastroesophageal reflux. Esophagitis was confirmed in a number of cases with esophagoscopy. During the period of the study, other cases were seen with asymptomatic hiatal hernias demonstrated on x-ray. These patients were not operated upon.

Surgical Procedure

The physiologic objectives of decreasing the concentration and volume of gastric secretion, creating a new esophagogastric sphincter and anchoring this valve within the abdomen are achieved in the following manner: (1) subdiaphragmatic vagotomy; (2) fundoplication; (3) fundopexy; and (4) pyloroplasty.

An upper abdominal midline incision permits adequate exposure. Downward traction of the stomach with continued tension allows the vagal trunks to be palpated and easily divided. Mobilization of the esophagus is not necessary. Vagotomy, while exerting a depressive effect on gastric acid production, is performed primarily to allow the esophagus to descent 4 or 5 centimeters into the abdominal cavity. This elongation facilitates the succeeding surgery and places the esophagogastric junction well within the pressure domain of the abdominal cavity.

Fundoplication describes the apposition of the anterior and posterior walls of the gastric fundus along the lesser curvature. A collar is formed around the distal esophagus and creates the sphincter mechanism necessary for a competent esophagogastric valve (*Figure 1*). This portion of the procedure can be facilitated by dividing the ascending esophageal branch of the left gastric artery thereby exposing the posterior wall of the fundus. Interrupted, non-absorbable sutures are used and their tails left long.

Fundopexy, or anchoring of the newly created sphincter, is accomplished next. The sutures used in the fundoplication are continued into the preaortic and pancreatic fascia. Fixation of the esophagogastric junction within the abdominal cavity helps to insure a competent sphincter by allowing the intra-abdominal pressure to exert its effect on the newly constructed valvular mechanism.

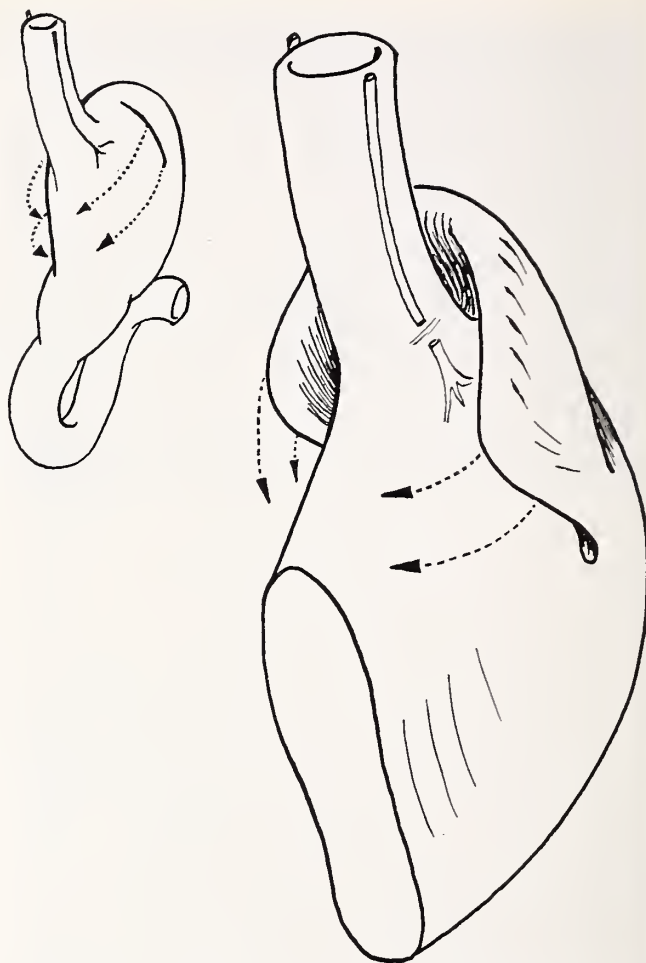


Figure 1. Creation of a new esophagogastric sphincter mechanism. Apposition of the anterior and posterior walls of the gastric fundus along the lesser curvature creates a collar around the distal esophagus.

Pyloroplasty, usually of the Heineke-Mikulicz type, accompanies vagotomy to allow proper gastric emptying. Pyloroplasty will also alleviate gastric outlet obstruction and secondarily reduce the volume of gastric juice available for reflux. The esophageal hiatus is ignored. *Figure 2* shows the completed operation.

Preoperative and postoperative care is no different from that required for other patients undergoing gastric surgery. Levin tube gastric suction is used 48 hours postoperatively. A graduated oral diet is started on the third day after surgery, and most patients have been discharged on the sixth or seventh postoperative day. Blood transfusion and the use of antibiotics have not been necessary.

Results

All patients were evaluated subjectively and with routine upper gastrointestinal x-rays. Some had cine-radiographic examinations and esophagoscopy to evaluate the competency of the esophagogastric valve and to confirm reflux esophagitis. All patients re-

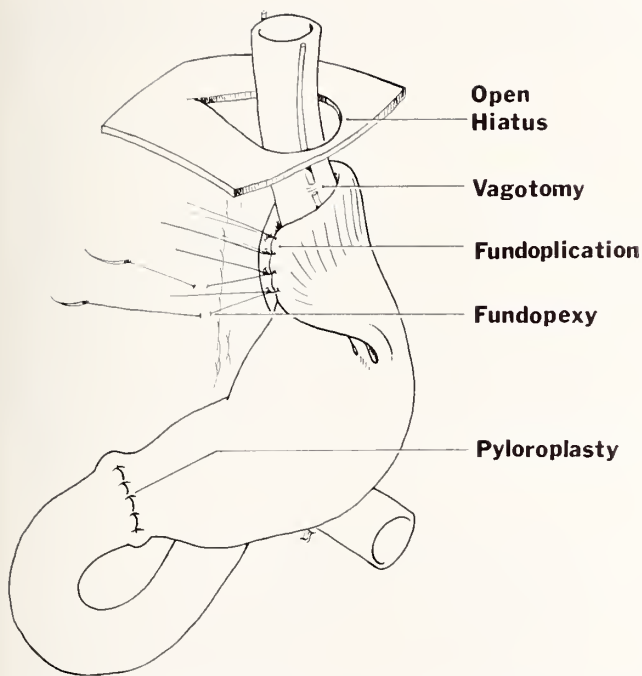


Figure 2. This diagram shows the completed operation. The sutures are being placed from the fundoplication to anchor the stomach. No attempt is made to close the hiatal hernia itself.

ported complete relief of preoperative symptoms. No one reported any dysphagia or difficulty with food sticking in the esophagus. Digestion was normal in all. Diarrhea was reported temporarily in a few and was considered to be secondary to the vagotomy. It did not require treatment. Mortality has been absent, and morbidity has been negligible.

Figure 3 shows a set of pre and postoperative x-rays. The hernia had been demonstrated radiographically for six years, gradually increasing in size. Symptoms of severe nocturnal epigastric burning and belching were also increasing in severity. These symptoms disappeared immediately after surgery. The x-rays taken eight months postoperatively in the head-down position show no reflux. The stomach remains within the abdominal cavity. The esophageal hiatus, which admitted three fingers, was not closed.

Discussion

An uncounted number of people in the general population have asymptomatic hiatal hernias. These people remain asymptomatic and unaware of their problem because they have no reflux of gastric secretion or an insufficient quantity to produce esophagitis. Although the hiatus is open, the sphincter is apparently competent. The patients operated upon in this series have, in effect, been transferred to this category.

(Continued on page 360)



Figure 3. (a) This preoperative x-ray shows a large portion of the stomach extending above the diaphragm. The hiatus hernia measured approximately 7 cm. at the time of surgery.



Figure 3. (b) Postoperative x-ray with a close-up of the reconstructed esophagogastric junction. A swallow of barium is seen entering the stomach which remains entirely below the diaphragm. No regurgitation could be demonstrated. The hiatus had not been closed.

Rectosigmoid Perforation

Idiopathic Rupture of the Rectosigmoid Colon

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PERFORATION OF THE RECTOSIGMOID colon secondary to trauma or disease appears to be fairly common. Idiopathic rupture, a rare entity, signifies perforation without any demonstrable underlying pathologic or traumatic process. This report concerns itself with a case presentation of such an entity and the suggestion of a new etiologic concept.

Case Report

This 27-year-old, married machinist, while reading the paper, experienced pain which started in the rectum and scrotum about 7:00 p.m. on October 23, 1968. He had eaten about 5:30 p.m.; the meal consisted of cabbage, meatloaf, and mashed potatoes. He went to the stool to have a bowel movement but had no stool. He became nauseated, but did not vomit. The pain became more severe in the lower abdomen. He was brought to the emergency room. There was no history of constipation.

The patient was hospitalized and by the next morning it was clear that the patient had experienced an abdominal catastrophe and had peritonitis.

The patient underwent an exploratory laparotomy. At operation, the anterior wall of the rectosigmoid was found to be perforated. The perforation measured approximately 2 centimeters in diameter. There was marked fecal soilage of the peritoneal cavity. There was also a 2 centimeter linear tear immediately above the point of perforation. Strikingly also was evidence of marked weakness of the peritoneum and fascial layers. These layers would not hold suture well and ripped out as the sutures were tied. Furthermore, the colon wall appeared thinner than normal.

Pathological impression on the material submitted for microscopic evaluation revealed normal appearing mucosal elements with thickening and edematous changes of the muscularis and serosa. There was organizing exudate on the serosal surface with numerous small capillaries, infiltration of inflammatory cells including polymorphonuclear cells, eosinophiles, and lymphocytes. Vessels were markedly congested.

Patient underwent closure of the perforation and a transverse defunctionalizing colostomy. The abdomen

was drained. Postoperatively, the patient had wound infection which was treated with antibiotics and fluids. He responded to treatment.

He was discharged on November 11, 1968, and on January 5, 1969, he was readmitted for closure of the colostomy. The patient has done well subsequent to the closure of the spontaneous colonic perforation.

A case of idiopathic rupture of the rectosigmoid is discussed.

Idiopathic rectosigmoid perforation is thought to be a rare occurrence, however, with 91 cases reported it cannot be considered uncommon. It is suggested that this condition is a disease entity of its own. The exact etiology remains in question.

A theory is advanced that perforation could take place during any period of increased intra-abdominal pressure provided the bowel walls have become attenuated for any reason.

Outpatient barium enema revealed no evidence of fistula formation, stricture or diverticulosis.

Discussion

Lyon¹ reviewed the literature and found 84 cases and added six of his own. These cases were all without demonstrable, pathologic, or traumatic etiology. These reported cases represent a uniform clinical picture and a very similar pathologic finding. This, along with the presence of various factors indicating common etiology, make it possible to consider idiopathic perforation of the normal sigmoid colon a disease entity.

Brodie² reported the first case of idiopathic rupture of the rectosigmoid colon. This occurred while the patient was straining during the act of vomiting. Since Brodie's report, straining seems to play a major role in a good majority of reported cases.

Edwards³ assumed that spontaneous perforation was not idiopathic but rather due to a state of pre-diverticulosis. He observed that in the early stage of diverticulosis the muscle wall of the colon may in

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some areas be very attenuated while the bowel wall from the outside appears normal.

Eadie⁴ suggested that the colon in such areas is more liable to rupture with a lower intraluminal pressure than the normal bowel. However, Kirkham⁵ reported a case where the rupture occurred proximal to an abnormally thin area of colon musculature.

In those cases reported where a barium enema was done following the rupture of the colon, nothing abnormal was found, not even early diverticulosis. Also, with a few exceptions, the rupture occurred on the antimesenteric border of the colon, an area where diverticuli are seldom found.

Goligher⁶ and others advocate that increased intraperitoneal pressure from whatever cause may give rise to a progressive deepening of the cul-de-sac of Douglas, and with loops of small bowel continually finding their way into this pouch, a severe maximal effort can give rise to rupture.

Minkari⁷ proposes that an increase in the intra-abdominal pressure in cases accompanied by rectal prolapse drive the rectum into the pelvis causing chronic inflammation of the mucosa of the rectum and dilatation and ulceration of the vein situated there. Violent and continuous effort lacerates the walls of the vein and thereby produces an intramural hemorrhage. The hematoma as formed separates the layers of the wall and continuation of effort finally causes its laceration.

Bunge⁸ first pointed out the relationship of hernias to intraperitoneal rupture. He showed that the increased intraperitoneal pressure produced by contraction of the abdominal muscles and diaphragm was transmitted equally to all parts of the bowel wall. He postulated that if an area of bowel was not exposed to increased intraperitoneal pressure as at the neck of a hernia sac, then the bowel wall could rupture at this unprotected site. But Aird⁹ believed "it would be simpler to explain these cases by over-stretching of a loop of bowel fixed at one end at the duodenojejunal junction and grip of the other by contraction of the abdominal muscles around the hernia orifice, thereby enabling intestinal rupture to occur at a distance from the hernia itself."

Noussias¹⁰ proposed a concept based on internal hernia implicating various foramina and intraperitoneal fossae through one of which a segment of the colon could become incarcerated with resulting distention and subsequent perforation of the colon.

Brearley¹¹ assumed that accumulation of hard fecal masses on the antimesenteric wall of the bowel where the blood supply is poorest, could cause ischemic necrosis leading to perforation; however, such findings are not described in any of the reported cases.

Perforation could take place during a period of increased intra-abdominal pressure, in a weak spot in

the bowel wall, caused partly by accumulation of hard fecal material, partly by repeated stress on the bowel wall due to straining at the stool. It is also possible, especially in those cases where constipation is a factor, that straining at hard fecal masses more distally offered more resistance than did the more proximal bowel wall.

Including the present case, there have been 91 cases of idiopathic perforation of the rectosigmoid reported in the literature. However, it is probably not as rare as one would think, because even though the first case was reported in 1827, one third of the reported cases have been reported during the past 20 years. These reported cases were all without demonstrable pathology or etiology. They represent a rather uniform clinical picture and very similar pathological findings. This would indicate a possibility of a common etiology which may make it possible to consider idiopathic perforation of the rectosigmoid not really so idiopathic. In *Table 1* we see that constipation was present in 81 per cent of those patients where it was either noted to be present or to be absent. A precipitating strain occurring at the time of perforation was present in 75 per cent, rectal prolapse was present in 37 per cent, evisceration in 33 per cent, and external hernia in 12 per cent.

TABLE I
CLINICAL FEATURES OF IDIOPATHIC
RECTOSIGMOID PERFORATION IN
57 MALE AND 34 FEMALE PATIENTS

	Present	Absent	Percentage	
			Un- known	Present (Unknown Excluded)
Constipation	49	11	21	81
Precipitating Strain	57	19	15	75
Rectal Prolapse . .	23	39	29	37
Evisceration	30	61	..	33
External Hernia .	6	41	44	12

To be able to effect a perforation of any tissue plane, there must be a gradient of pressure across this plane sufficient to tear or perforate the plane. This pressure would have to be greater than the tensile strength of the plane.

This could occur in three ways:

1. The tensile strength of the given plane (namely the wall of the rectosigmoid) could be decreased.
2. If there was increased extraluminal pressure without concomitant collapse of the lumen of the bowel.
3. If there was an increase of intraluminal pressure in a closed system.

These events could occur if the patient has a problem which would cause chronic straining such as constipation. It is a well-recognized fact that the valsalvo maneuver causes a deepening of the pouch of Douglas. Therefore, if there is progressive deepening of the pouch of Douglas and the lower one third of the rectum is fixed securely laterally at the level of the levator ani where the puborectalis muscle angles the rectum forward, the bulging anterior rectal wall would then be the sole barrier between the intra-abdominal pressure and the lumen of the rectum. This descent of the peritoneal sac on straining and its indentation on the anterior rectal wall has been demonstrated by roentgenographic means.

The above mentioned stretching would potentially lead to an attenuation of the anterior rectal wall, and during the period of straining and increased intra-peritoneal pressure, a pressure gradient would exist across the plane of the anterior rectal wall. And, in a patient who is constipated or has a fecal impaction sufficient to block the lumen of the rectum distally, any pressure outlet is effectively blocked. It is feasible, therefore, that the effect of chronic straining and stretching would be to decrease the tensile strength of the rectal wall as well as potentially having high enough intraperitoneal pressure to cause a perforation through the anterior rectosigmoid into the lumen of the rectum.

In those patients who perforated while giving a negative history of straining, it is possible that intraluminal peristaltic pressure alone was sufficient to perforate the colon. It is known that the intraluminal peristaltic pressure will reach 80 millimeters of mercury. Since intraperitoneal pressure does not equal intraluminal pressure, a differential gradient does exist across this bowel wall and chronic stretching, secondary to chronic constipation, could cause weakness.

Therefore, it is suggested that the combination of thinning of the wall of the colon secondary to chronic straining resulting in deepening the pouch of Douglas, plus the resistance of distal feces or anal sphincters may be the etiology in those cases which perforate without one of the more commonly accepted etiologies of perforation of the rectosigmoid being present.

References

1. Lyon, D. C. and Sheiner, H. J.: Idiopathic rectosigmoid perforation. *SG&O*, 128 (991) 1969.
2. Brodie, B. C.: Case of a singular variety of hernia. *London Med. Phys. J.*, 57:529, 1827.
3. Edwards, H. C.: *Diverticula and diverticulitis of the intestine*. Bristol: John Wright and Sons, Ltd. 1939.
4. Eadie, J. W.: Spontaneous perforation of the normal pelvic colon. *Brit. J. Surg.* 43:189, 1955.
5. Kirkham, C. S.: A study of spontaneous perforation of the normal pelvic colon. *Brit. J. Surg.* 48:126, 1960.
6. Goligher, J. C.: The treatment of complete prolapse

of the rectum by the Roscoe Graham operation. *Brit. J. Surg.* 45:323, 1958.

7. Minkari, T. and Turan, C.: Rectosigmoid rupture caused by effort during defecation and acute evisceration of several loops of small intestine through the anus. *Ann. Surg.* 154:967, 1961.

8. Bunge, R.: Zur Pathogenese der Subcutaneu Darmrupturen. *Beitr. Klin. Chir.* 47:771, 1905.

9. Aird, I.: The association of inguinal hernia with traumatic perforation of the intestine. *Brit. J. Surg.* 24:529, 1937.

10. Naussias, M. P.: Spontaneous rupture of the bowel. *Brit. J. Surg.* 50:195, 1962.

11. Brearley, R.: Spontaneous perforation of the colon due to alkaline medication. *Brit. Med. J.* 1:743, 1954.

Symptomatic Hiatus Hernia

(Continued from page 357)

The patients are asymptomatic for the same reason; no gastroesophageal reflux is present with the reconstructed sphincter or occurs in insufficient quantity to cause esophagitis.

References

1. Allison, P. R.: Reflux esophagitis, sliding hiatal hernia, and the anatomy of repair. *Surg. Gynec. Obstet.* 92:419, 1951.
2. Clagett, O. T.: Present concepts regarding the surgical treatment of esophageal hiatus hernia. *Ann. Roy. Coll. Surg.* 38:195, 1966.
3. Sweet, R. H.: Experiences with 500 cases of hiatus hernia. Statistical survey. *J. Thorac. and Cardiovas. Surg.* 44:145, 1962.
4. Berman, J. K. and Berman, E. J.: Management of esophageal hiatus hernia syndrome and associated abnormalities with balanced operations. *Dis. Chest.* 39:233, 1961.
5. Rate, Robert G.: Refinements in the surgical repair of esophageal hiatal hernia. *Jour. Int. Coll. Surg.* 42:603, 1964.
6. Hiebert, C. A. and Belsey, R.: Incompetency of the gastric cardia without radiologic evidence of hiatal hernia. *J. Thorac. and Cardiovas. Surg.* 42:352, 1961.
7. Nissen, R.: Gastropexy and "Fundoplication" in surgical treatment of hiatus hernia. *Amer. Jour. Digest. Dis.* 6:954, 1961.
8. Nissen, R.: The treatment of hiatal hernia and esophageal reflux by fundoplication. In *Hernia*. Nyhus, C. M. and Harkins, H. N., Editors, Philadelphia, J. B. Lippincott Co., 1964.
9. Thal, A. P., Hatafuku, T., and Kurtzman, R.: New operation for distal esophageal stricture. *Arch. Surg.* 90:464, 1965.
10. Thal, A. P.: A unified approach to surgical problems of the esophagogastric junction. *Ann. Surg.* 168:542, 1968.

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Seat Belt Fractures

Chance Fractures Caused by Seat Belts: Presentation of Three Cases

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TRAUMA RESULTING FROM the wearing of seat belts during automobile accidents has been the subject of numerous studies. The vast majority of such injuries are intra-abdominal (ruptured spleens, damaged intestines, arteries or veins, etc.) and are not associated with bony injury.

Seat belt injuries of the lumbar spine can be classified into three categories:

(1) Dislocation without bony damage (demonstrated on x-ray, *Figures 1 and 2*).

(2) Compression fractures of the lumbar spine (usually lumbar 2 through 4). These constitute the majority of fractures (*Figure 3*).

(3) Chance fractures—also called “splitting-apart fractures,” “fulcrum fractures,” and “seat belt fractures” (*Figure 4*).

Literature Review

Chance¹ was a British radiologist who described the fracture which he stated consisted of a “horizontal splitting of the spine and neural arch, ending in an upward curve which usually reaches the upper surface of the body just in front of the neural foramen.” He reported three cases in 1948, and concluded that the fractures were stable and there was no cord damage and little wedging of the anterior vertebral bodies. In his opinion, hyperflexion of the spine was the basic pathomechanic factor producing this injury. The fractures he described were all in the lumbar spine, but he did not state which vertebrae were involved and did not indicate whether his patients were wearing seat belts.

In 1962, Garrett and Braunstein² reported on 944 injuries sustained by belt users. In this large series, there were 12 lumbar spine injuries of which eight were lumbar spine compression fractures (L2 through L4). The other four consisted of minor subluxations or severe contusions. These were attributed to injuries resulting from the lap belt. The mechanism of injury was believed to be a combination of the restraining action of the seat belts, spinning or bounc-

ing gyrations of the car during multiple impacts, and an element of vertical compression caused by a “pancake landing.” These 12 injuries were seat belt injuries but not the Chance type fracture.

In 1965, Howland *et al.*³ reported the first Chance fracture attributed to seat belts, and called this a “split-apart fracture” or a “seat belt fracture.”

In 1967, a “fulcrum fracture” of L3 was reported by Fletcher and Brogdon,⁴ and this Chance fracture resulted from the wearing of a loosely fitting lap belt. Smith and Kaufer,⁵ also in 1967, reported ten lumbar spine fractures or dislocations in seat belt users. Three fractures were the Chance type. Smith and Kaufer’s discussion of the mechanism of injury is excellent, and in our opinion it appears to be the logical explanation. This will be discussed later.

In 1967, Slatis⁶ reported on 52 patients who sustained injuries while wearing diagonal belts with or without lap belts. Two of these injuries were fractures of the lumbar spine, one a compression fracture of L4 with paraplegia and the other a compression fracture of T12. Neither was a Chance fracture. Fourteen were fractures of the thoracic cage and one a fracture of spinous process of C6. Mesenteric tears were the most common injury, and patients with this complication presented with acute abdomens which required immediate surgery. This is a significant point, and physicians treating trauma of this nature must be alert to this complication and be prepared for surgical intervention. There were no deaths in this series.

In 1968, Carrol and Gruber⁷ reported two cases of “seat belt fractures” of the Chance type, one of L1 and the other of L2, in patients wearing lap belts. Both patients were treated by spinal fusion, and one patient had temporary disability with residual weakness in the dorsiflexor muscles of the feet which improved following spinal fusion with an intraspinous H-block fusion and immobilization in a body cast. In 1969, Steckler *et al.*⁸ reported a Chance fracture of L3 associated with an anterior dislocation of L2 on L3. This patient presented with a flaccid paraplegia of the lower extremities. This condition improved following laminectomy.

Read by Dr. Bailey at the annual meeting, Kansas Chapter, American College of Surgeons, Kansas City, Kansas, October 26, 1969.

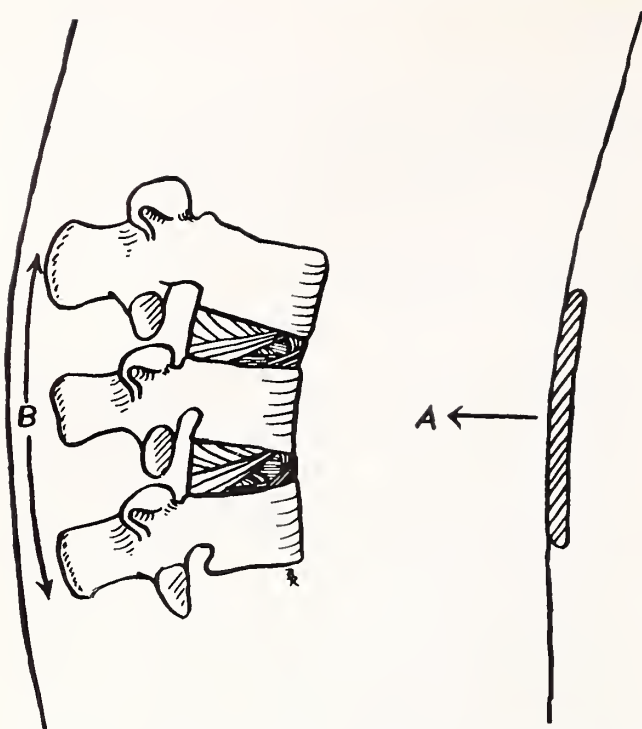


Figure 1. Diagrammatic illustration depicting ligamentous tears without fracture.

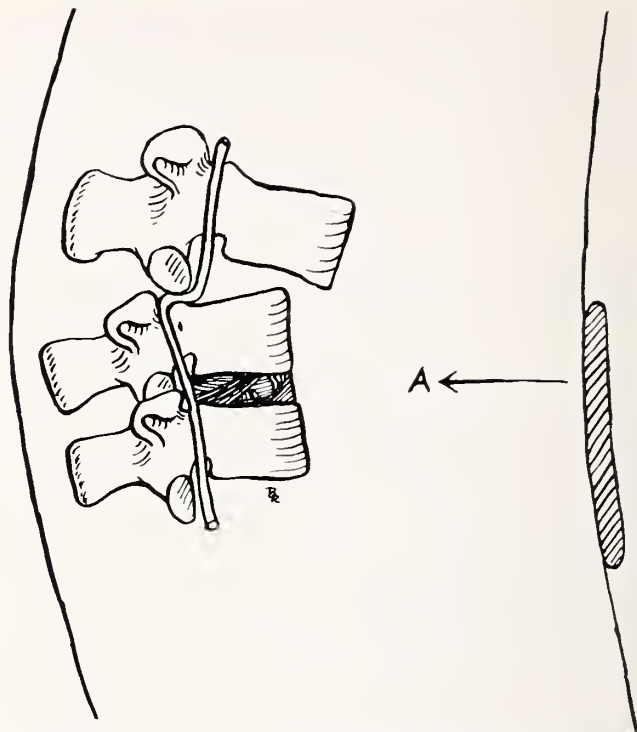


Figure 2. Diagrammatic illustration depicting dislocation without fracture.

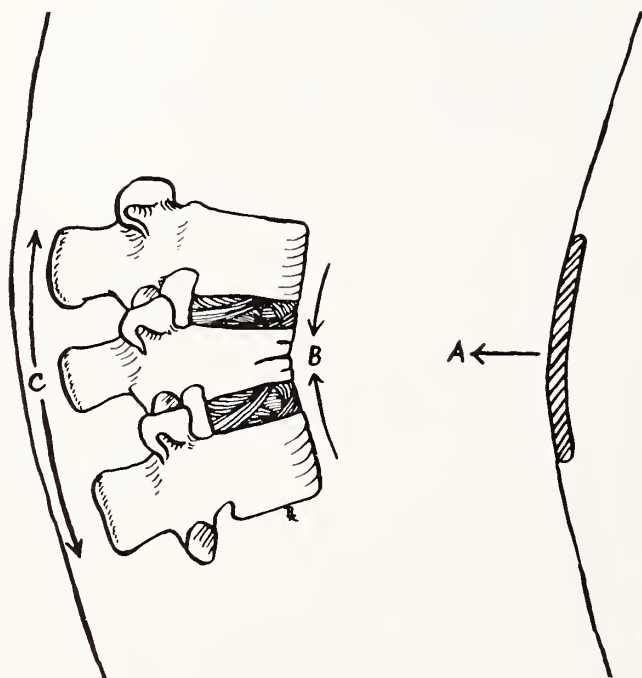


Figure 3. Diagrammatic illustration depicting compression fracture.



Figure 4. M.S. Anteroposterior roentgenogram illustrating separation of the transverse processes bilaterally with fracture through the vertebral body.

In 1969, Smith and Kaufer⁹ reported, in a second article, on an enlarged series of Chance fractures, and expressed the opinion that these fractures were pure tension injuries.

Our interest in these fractures was stimulated by three classic Chance fractures which were treated in 1968.

Case No. One

M. L., a 15-year-old female, was involved in an automobile accident in April, 1968. She was a passenger in the right front seat of an automobile traveling 50 miles an hour which collided head-on with a pickup truck. On her admission to St. Francis Hospital, the following injuries were noted: six broken teeth, multiple facial lacerations, broken nose, a contusion across her lower abdomen just above her iliac crest secondary to seat belt compression, and a lumbar spine fracture. X-rays of the lumbar spine showed a transverse fracture through the vertebral body of L3 with compression of the anterior lip of the vertebra and a splitting of the pedicles and transverse processes bilaterally (*Figures 4 and 5*). There was no neurological damage. Treatment consisted of pelvic traction for two weeks; then an extension body cast was applied for one month. Six weeks after injury, the cast was removed and x-rays revealed excellent healing. A Jewett extension brace was applied, and she wore this until December of 1968. Nine months post-injury, she was asymptomatic except for a mild

dull ache in the lumbar area which appeared with changes in the weather and with fatigue. She attended school daily and was normally active.

Case No. Two

In September, 1968, R. S., a 22-year-old male, was asleep in the back seat of an automobile which was involved in an accident. The lap belt was fastened loosely over his abdomen, and his knees were resting against the back of the front seat. The high-riding belt produced massive bruises of the entire lower abdomen. X-rays showed a transverse fracture through the body of L3 with minimal anterior compression and a splitting of the lamina and transverse processes bilaterally (*Figures 6 and 7*). The bruises and the Chance fractures were the only injuries sustained. He was kept at bedrest for ten days. He was then fitted with a Jewett brace, and ambulation was begun. One month post-injury, the fracture through the body was no longer visible on x-ray, but the splitting of the transverse processes was still apparent. He was permitted at five months to return to unrestricted manual labor which required the repeated lifting of weights of 70 to 100 pounds. Six months post-injury, he was asymptomatic and continued to do heavy manual work without complaints.

Case No. Three

On September 15, 1968, T. M., a 19-year-old female was a passenger in the right front seat of a car which careened off the road and overturned when the driver lost control. There were seat belt-inflicted contusions above both iliac crests, and x-rays revealed a splitting through the pedicles and transverse processes bilaterally with a fracture into the vertebral body inferiorly (*Figures 8 and 9*). There was no anterior vertebral wedging. During her early post-injury period, she was treated by hyperextension in bed. An ileus promptly developed. This responded to change of the patient's position from hyperextension to a simple neutral supine posture which was continued for six weeks. After six weeks in bed, an extension body cast was applied which was worn for three months followed by a Jewett brace which was worn for one month. Since removal of the brace, the patient has denied any ill effects from the fracture. As a college student, she attends classes regularly and engages in all campus activities.

Discussion

Recent analysis of the pathomechanics of Chance fractures indicates that these injuries are due to distraction or tension in which posterior spinal ligaments remain intact and actually pull the vertebrae apart (*Figure 10*). The high-riding seat belt (A)



Figure 5. M.S. Lateral projection showing transverse fracture through the vertebral body and pedicles.

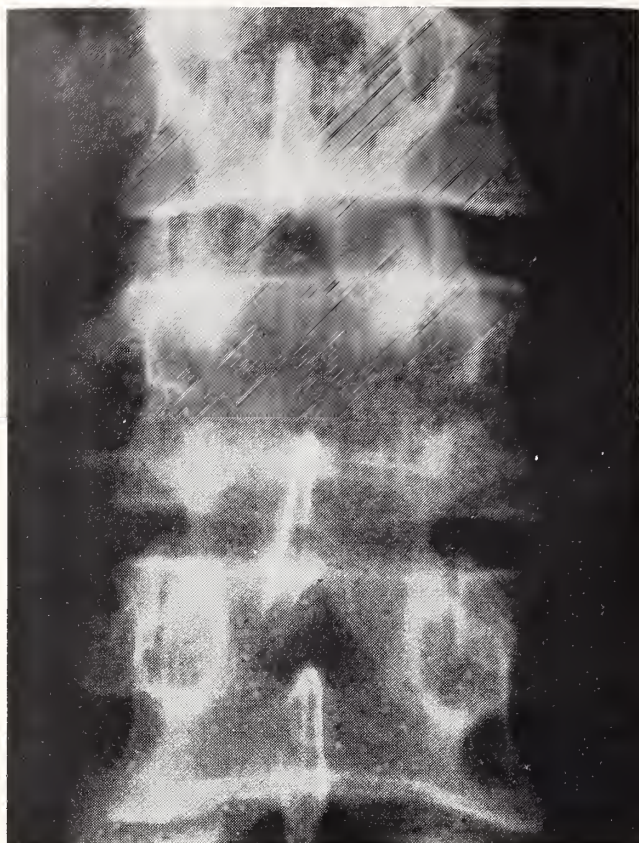


Figure 6. R.S. Anteroposterior roentgenogram illustrating bilateral separation of the transverse processes and vertebral body.



Figure 7. R.S. Lateral projection showing transverse fracture through the vertebral body and pedicles.



Figure 8. T.M. Anteroposterior roentgenogram depicting separation of the transverse processes and vertebral body. There is only partial separation of the transverse process on one side.



Figure 9. T.M. Lateral roentgenogram depicting separation of the pedicles with fracture inferiorly into the vertebral body.

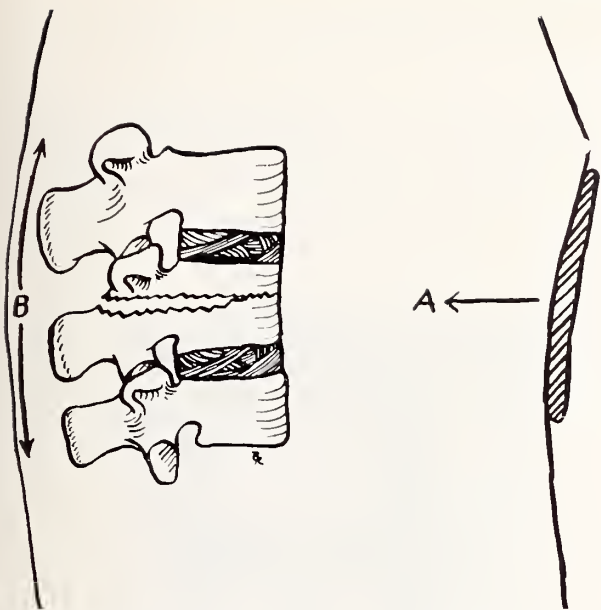


Figure 10. Illustration depicting force (A) created by seat belt at the instant of impact resulting in a distraction force (B) in the vertebrae opposing the seat belt.

acts as a stress point and fulcrum allowing the body to be wedged over this point, producing a fracture of the vertebral body, pedicles, lamina, transverse processes, with or without fracture of the spinous processes (B). A surprising feature is the maintenance of integrity of the facets and of the apophyseal joints. The transmission of forces which produce this fracture are illustrated in Figure 10. This demonstrates the change in dynamics of the normal spine which results from a high-riding car seat belt. The fulcrum point has now been shifted from the center of the nucleus pulposus to the anterior body wall. Normally, hyperflexion of the lumbar spine produces compression of the anterior vertebral body and separation of the posterior elements as the spine acts on the fulcrum of the nucleus pulposus. The high-riding seat belt shifts the fulcrum forward to the abdominal wall, resulting in the entire vertebrae being exposed to a distraction force. The amount of distraction produced at the time of injury depends on how effectively the seat belt has shifted the fulcrum point from the nucleus pulposus to the anterior abdominal wall. Most of the Chance fractures reported in the literature have demonstrated a varying amount of anterior vertebral body compression. In these cases, no neurological sequela resulted except when the fracture was associated with dislocation. Neurologic complications were not sustained in our three cases. These fractures are surprisingly stable and can be treated by extension of the spine as soon as the danger of ileus has passed. When the period of severe discomfort has passed, a cast or brace may be fitted and the patient made ambulatory. In our

three cases, surgical stabilization of the spine by fusion has not been necessary.

Loosely applied seat belts or belts applied so they cross the abdomen above the iliac crest have been the prime etiological factor in all cases. A force of great magnitude is necessary to produce a splitting of the posterior vertebral elements and the vertebral body. In most cases, the car was traveling at high speed when it struck a stationary object or was involved in a head-on collision. In the future, this fracture may become more common as increasing emphasis is placed on the use of seat belts. Seat belts are valuable and must be used, but they should be applied properly. We believe that without seat belts the patients reported here would probably have died rather than sustaining injuries which, although serious, responded to conservative treatment.

The opinion has been expressed that the use of the diagonal seat belt in conjunction with the lap belt may raise the level of trauma to the cervical or cervicothoracic level. We have not seen this type of injury.

Conclusion

1. Chance fractures occurring in car accidents are due to improperly placed or loose seat belts.
2. This injury results from high velocity collisions.
3. The fracture is surprisingly stable and can be treated by bracing or casting in extension.
4. The prognosis for this fracture is excellent.

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References

1. Chance, G. Q.: Note on a type of flexion fracture of the spine. *British Journal of Radiology*, Vol. 21, p. 452, 1948.
2. Garrett, J. W. and Braunstein, P. W.: The seat belt syndrome. *Journal of Trauma*, Vol. 2, p. 220, 1962.
3. Howland, W. J.; Curry, J. L. and Buffington, C. B.: Fulcrum fractures of the lumbar spine. *Journal of the American Medical Association*, Vol. 193, p. 240, 1965.
4. Fletcher, B. D. and Brogdon, B. G.: Seat-belt fractures of the spine and sternum. *Journal of the American Medical Association*, Vol. 200, p. 167, 1967.
5. Smith, W. S. and Kaufer, H.: A new pattern of spine injury associated with lap-type seat belts: A preliminary report. *The University of Michigan Medical Center Journal*, Vol. 33, p. 99, 1967.
6. Slatis, P.: Injuries sustained by car occupants using safety belts. *Annales Chirurgiae et Gynaecologiae Fenniae*, Vol. 56, Fasc. 4, p. 424, 1967.
7. Carroll, T. B. and Gruber, F. H.: Seat belt fractures. *Radiology*, Vol. 91, p. 517, 1968.
8. Steckler, R. M.; Epstein, J. A.; and Epstein, B. S.: Seat belt trauma to the lumbar spine. *Journal of the American Medical Association*, Vol. 207, p. 758, 1969.
9. Smith, W. S. and Kaufer, H.: Patterns and mechanisms of lumbar injuries associated with lap seat belts. *Journal of Bone and Joint Surgery*, Vol. 51-A, p. 239, 1969.

The President's Message

In the past two issues we have been discussing some of the organizational structure of the Kansas Medical Society. Originally we talked about the various elected officers, the Council and the House of Delegates. Last month we discussed the Commission for Society Organization and the Commission for Socio-Economics. In this issue I will briefly outline the other three commissions which will conclude the five commission structural organization of the Kansas Medical Society. I hope that with this brief outline you will have a more comprehensive view of the mechanics of our Society and how changes in policy are instituted.

The Commission for Education, W. R. Roy, M.D., of Topeka, chairman, deals with all phases of health and medical education, not only for the physician but for the continuing education of the population as a whole. The First Vice President of the Kansas Medical Society is the liaison physician from the Executive Committee to this commission. This commission considers all subjects included in the following headings: Preceptor Program, AMA-ERF, Intern-Resident Program, Community Health Week, K. U. Expansion, Medical School, School Health, Information and Education Activities, History, Medical Education, Relations with K. U. Medical School, College Health, Health Careers, Postgraduate Education, SAMA, and Legislative Activities. This commission will also consider any other related activities suggested by any other source. As these questions are raised they will be assigned to the appropriate committees where further exploratory work will be done and recommendations made.

J. N. Blank, M.D., of Hutchinson, is the chairman for the Commission for Health Services, and the Second Vice President is the direct liaison physician between the Executive Committee and the commission activities. For the current year, this commission will be dealing with the following subjects: Emergency Care, Public Health, Coroners, Disaster Planning, Relationship with Hospitals, Allied Groups, Rehabilitation, Rural Health, Religion, Drugs, Four-Level Medical Care, Relationship with Veterinarians, Nursing Homes Problems (Committee on Aging), White House Conference Committee on Aging, Future Patient Care, Paramedical, and the recently combined RMP-CHP programs. As with the other commissions, any other items that will properly fall within the activities of this commission will be assigned as needed. I feel that this is a particularly important commission this year because of the activities of the Future Patient Care Committee and the changing patterns of the delivery of health care services.

The final commission is the Commission for Scientific Study, N. V. Treger, M.D., of Topeka, chairman. The First Vice President of the Kansas Medical Society is the Executive Committee liaison physician with the activities of this commission. The commissions are limited to 18 members and at least half of these must remain for more than one year of service on the commission to help provide continuity. At the recent House of Delegates meeting the composition of this commission was changed somewhat to enable it to be the representative commission for all specialty societies



within the Kansas Medical Society. As such, the 18-member limitation was removed from this commission and each of the specialty societies have been contacted and asked to recommend a person to represent his society as a direct liaison with the Kansas Medical Society. As soon as we have replies, the membership of this commission will be completed. Currently, the assigned areas within the Commission for Scientific Study include: Venereal Disease, Radiology, Internal Medicine, Hearing and Speech, Pathology, Pediatrics, Urology, Orthopedics, Maternal Welfare, Welfare, Conservation of Eyesight, Respiratory Diseases, Allergy, Anesthesia, Cancer, Aero-Space, and Organ Transplants. This will enable the Kansas Medical Society to have a direct liaison with each specialty society, and, hopefully, will serve to improve the communications throughout the whole medical community.

I have asked each of the commissions to make a critical analysis of the assignments they have been given this year and to evaluate their commission activities in order to help make it a more effective part of the organizational structure.

I hope this brief outline of the organizational structure of the Kansas Medical Society will improve the effectiveness and productivity of our communications and help the Society reach its goals. This will serve as a reminder to each physician in Kansas that he truly does have opportunity and responsibility to help guide and direct the policy determinations that are carried forward by your elected officers.

FRANCIS T. COLLINS, *President*



The Graduates

Summer is almost past and we have been watching in the mailbox daily, but it appears we're not going to get an invitation to give a graduation address. Despite the brilliant and cogent thoughts that will go unuttered, it is probably better this way because, as far as we know, there has been only one good commencement address given. This was in the days of our youth at an outdoor ceremony where the speaker rose and, noting the threatening sky, said, "Well, it looks as if it's about to rain and I doubt if you would be particularly interested in what I have to say, so I think we ought to just get on with passing out the diplomas." The applause was deafening and the message remembered.

Considering the evanescent effect of graduation addresses on the graduates, it would probably be better to aim the message at the older people. They, at least, would be surprised and pleased at the attention. They might feel they thought of it first and could have said it better, but that is the risk assumed by any speaker at The Inspirational Occasion.

The over-the-hill group could stand a little inspiring. It finds its positions threatened by the battle cries of the young, which seem in many forms but maximum volume. It recognizes some truth in the criticisms so articulately thrown at it, but is fearful of seeking negotiations for the simple reason it sees no place for itself in the new order. It is not easy to accept the proposition that the tenets one worked from, the objectives one sought, and the successes one achieved were all fundamentally false, but this is the essence which seems to come through. As with our unhappy military situation, the elders are maneuvered into a position of fighting a battle they don't want or seeking withdrawal they can't abide. In

reactive frustration, they attempt to administer the archaic rod with the appropriate preamble, "This hurts me worse that it does you," only to find this is too true because the off-spring has grown too large and too smart to accept the spanking.

It seems to us the only sustenance for the older generation during this tumult is to recall that, although the stage props are different and the musical accompaniment cacophonous, the play is the same and hasn't missed a performance since the Paleolithic Players first opened it. Youth has continually been the idealist. He sees the weak spots, the inequities, the shabbiness of the system and vows that he will improve on it. And he does. Age pleads that experience counts for something—and it does—but his experience cannot be passed *in toto* to Youth, so he has to sit nervously by while Youth proceeds to learn and, in the process, makes some colossal errors and some magnificent advances. Inefficient as the system seems, there has never been a time when some progress has not been made.

Conditioned to a learning process that required a certain amount of time and followed a prescribed pattern, we are uneasy when the pressure is applied on us to turn medical students out to practice before, by our concepts, they are ready—and appalled when they go out on their own. Recalling our own anxieties about offending our teachers or even staying in school, we are dismayed when it seems that students are apparently telling the administration what they will or will not do. But, with effort, perhaps we can see that it is the same old struggle in a new setting. Experience does count, and it has to be obtained in the same old way—on the patient—regardless of how

the social planners produce him. There are no instant doctors.

The oldsters in medical practice must listen with some benignant humor to the plethora of criticism directed at them by the young, both within and without the profession. Dr. Frankenstein, over the last hundred years, has taken the medical knowledge of centuries, cultured it, added to it in fantastic ways until he has a monster of such social significance, he is not sure how to control it. The very success of the system threatens to bring it down.

The idealism and liberal attitude of youth are its strongest virtues—not its intellect, for great as this is, its supremacy over that of the previous generation is one of quantity, not quality. And we wish it great success because you know what happens to a liberal who achieves his goal. He becomes conservative.—D. E. G.

Along the Bookshelf—

Clendening Medical Library

RECENT ACQUISITIONS

- Arnow, Leslie Earle. Health in a bottle; searching for the drugs that help. Philadelphia, Lippincott, 1970.
- Braun, Armin C. The cancer problem; a critical analysis and modern synthesis. New York, Columbia University Press, 1969.
- Byrd, Oliver E. Medical readings on drug abuse. Reading, Mass., Addison-Westley, 1970.
- Chapman, Arthur Harry. The physician's guide to managing emotional problems. Philadelphia, Toronto, Lippincott, 1969.
- DeGravelles, William D. Injuries following rear-end automobile collisions. Springfield, Illinois, Thomas, 1969.
- Ferguson, Lucy Rau. Personality development. Belmont, California. Brooks/Cole Publishing Company, 1970.
- Frommer, Eva A. Voyage through childhood into the adult world; a description of child development. Oxford, New York, Pergamon Press, 1969.
- International Symposium in Mental Science, 1st, Houston, Tex., 1967. Congenital mental retardation. Austin, University of Texas Press, 1969.
- Kübler-Ross, Elisabeth. On death and dying. New York, Macmillan, 1969.
- Liley, Helen Margaret Irwin. Modern motherhood; pregnancy, childbirth and the newborn baby. New York, Random House, 1969.
- Ludwig, Alfred O. Psychosomatic aspects of gynecological disorders; seven psychoanalytic case studies. Cambridge, Massachusetts, Harvard University Press, 1969.
- Medicine in the university and community of the future; proceedings of the Scientific Sessions marking the Centennial of the Faculty of Medicine, Dalhousie University, September 11-13, 1968. Halifax, Nova Scotia, 1969.
- National Library of Medicine. The principles of MEDLARS. Bethesda, Maryland, Government Printing Office, Washington, D. C., 1970.
- The President's Committee on Mental Retardation. Residential services for the mentally retarded; an action policy proposal. Washington, D. C., United States Government Printing Office, 1970.
- Roberts, John Alexander Fraser. An introduction to medical genetics. London, New York, Oxford University Press, 1970.
- Rosengren, William R. Hospitals and patients. New York, Atherton Press, 1969.
- Sex Information and Education Council of the United States. Sexuality and man. New York, Scribner, 1970.
- Tainter, Maurice L. Aspirin in modern therapy; a review. New York, Bayer Co., 1969.
- Tuft, Louis. Allergy in children. Philadelphia, Saunders, 1970.
- Vaux, Kenneth. Who shall live? Medicine, technology, ethics. Philadelphia, Fortress Press, 1970.
- Zamir, Lelia Jaffe. Expanding dimensions in rehabilitation; a reference for the health professional. Springfield, Illinois, Thomas, 1969.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

Joseph H. Baker, M.D.
704 Main
LaCrosse, Kansas 67548

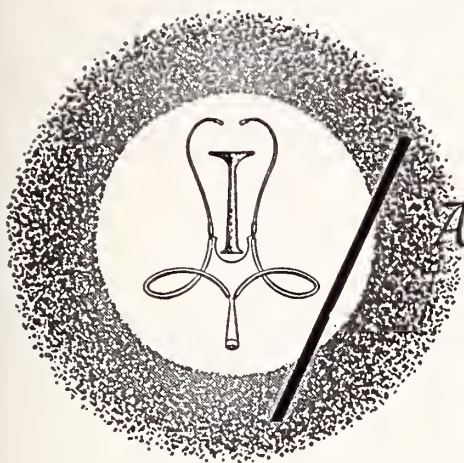
James A. Loeffler, M.D.
3333 E. Central Avenue
Wichita, Kansas 67208

George Dyck, M.D.
1301 Grandview Avenue
Newton, Kansas 67114

William J. Madden, M.D.
P.O. Box 367
Lincoln, Kansas 67455

Lawrence C. Green, M.D.
112 E. Central Avenue
Arkansas City, Kansas
67005

Miguel D. Parra, M.D.
6111 Leavenworth Road
Kansas City, Kansas 66104



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the DOCTOR'S CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

SEPTEMBER

Sept. 18-20 20th annual scientific assembly, Kansas Academy of General Practice, Holiday Inn, Lawrence.

Sept. 19-25 Annual Otolaryngologic Assembly of 1970, Eye and Ear Infirmary of the University of Illinois Hospital. Otolaryngologists should direct inquiries to: Otolaryngology, P. O. Box 6998, Chicago 60680.

Sept. 25 2nd annual Academic Assembly for Continuing Education of Physicians, devoted to study of non-neoplastic diseases of the colon. St. Francis Hospital School of Nursing Auditorium, Wichita.

OCTOBER

Oct. 2-3 American College of Physicians (Oklahoma/Arkansas area meeting), Fountainhead Lodge, Checotah, Oklahoma. For information write: Robert M. Bird, M.D., 800 N.E. 13th Street, Oklahoma City 73104.

Oct. 5-9 75th annual session, American Academy of Ophthalmology and Otolaryngology, Convention Center, Las Vegas.

Oct. 9-10 Conference on the care of musculoskeletal injuries (especially designed for the non-orthopedist) University of Iowa Health Center, Iowa City. For information write: Director, Office of Medical Education, 245 Medical Research Center, University of Iowa, Iowa City 52240.

Oct. 9-10 *Diagnosis and Treatment of Common Rheumatologic Problems*, Bryan Me-

Oct. 12-16 56th Annual Clinical Congress, American College of Surgeons, Conrad Hilton Hotel, Chicago. Write: Mr. T. E. McGinnis, ACS, 55 E. Erie St., Chicago 60611.

Oct. 18-23 American College of Emergency Physicians, Scientific Assembly, Las Vegas. For information: Executive Secretary, 120 W. Saginaw, East Lansing, Michigan 38823.

Oct. 21-23 17th Western Cardiac Conference, *What's New in Cardiology*, University of Colorado Medical Center, Denver. Write the Colorado Heart Association, 1375 Delaware Street, Denver 80204.

Oct. 22-24 Annual Fall Clinical Conference, Kansas City Southwest Clinical Society, Hotel Muehlebach, Kansas City, Missouri. Contact: Miss Alta L. Bingham, Executive Secretary, 3036 Gillham Rd., Kansas City, Missouri 64108.

Oct. 23-30 98th Annual Meeting, American Public Health Association, Houston Civic Center, Houston, Texas. For information: Mrs. Marion Paul, American Public Health Association, 1740 Broadway, New York, N. Y. 10019.

Oct. 25-29 36th Annual Meeting, American College of Chest Physicians, Century Plaza Hotel, Los Angeles. Write: American College of Chest Physicians, 112 E. Chestnut, Chicago 60611.

Oct. 26-28 40th Annual Fall Conference, Oklahoma City Clinical Society, Hotel Oklahoma. For information write: Mrs. Alma O'Donnell, Exec. Sec., Oklahoma City Clinical Society, 601 Northwest Expressway, Oklahoma City 73118.

Oct. 30-31 2nd Annual Birth Defects Symposium, *Disorders of Glucose Metabolism in Children*, University of Florida College of Medicine, Gainesville. Write: Mrs. Betty J. Howard, Div. of Postgraduate Education, J. Hillis Miller Health Center, Gainesville, Florida 32601.

POSTGRADUATE EDUCATION

University of Kansas:

Sept. 28-29 **The Missing Links in Delivery of Health Care**

Oct. 1-2 **School Health: Legal Issues for Personnel and Districts**

Oct. 5-6 **Nurse Anesthesia in the Seventies**

Oct. 8-9 **Radiologic Technology**

Oct. 20-21 **Medicine and Religion: Youth Problems.**

For further information write the Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas 66103.

University of Colorado:

Sept. 28-Oct. 2 *Hospital Medical Staff Conference* (Estes Park)

Oct. 5-9 *High Risk Infant Care*

Oct. 12 *Oral Cancer Seminar*

Oct. 26-29 *The Medical Audit and Continuing Education*

For further information write the Office of Postgraduate Medical Education, University of Colorado School of Medicine, 4200 E. Ninth Ave., Denver 80220.

Nov. 2-5 55th Annual Scientific Assembly, Interstate Postgraduate Medical Association, Palmer House, Chicago. For information write the Interstate Postgraduate Medical Association, 307 N. Charter St., Madison, Wisconsin 53715.

Education-Information Program

Report July 15-August 15

HANK PARKINSON, *Coordinator*

Publicity awareness continued at a satisfactory level during this 30-day period. Three releases were prepared and distributed to the Kansas news media and the clipping service indicated excellent usage of all three. Subjects covered included:

1. The fact that the family doctor is not a thing of the past in the Sunflower State and that 43 per cent of all physicians now practicing are engaged in family practice.
2. A warning that two of every three deaths among the 15 to 24 year age group are from accidental causes.
3. A release noting that alcohol is a major factor in accidental deaths—both on the highway and in the home.

The release on alcohol was moved by both wire services and received extensive use on the electronic media, as well as the newspapers.

In other projects, the first of the fillers were completed and submitted for approval. These fillers will be forwarded during the next 30-day period to all

daily and weekly newspapers in the state. The public service spots are also being programmed on an estimated 30 Kansas radio stations.

The agency began planning for Community Health Week in October and a variety of projects will comprise this promotion, including:

1. Activation of a Speakers Bureau.
2. Heavy publicity.
3. Proclamation signings on the part of the Governor and mayors of the larger cities.
4. Radio and television interviews of KMS officials.

By coordinating national AMA activities with the local effort, we feel the Kansas audience will be more apprised of Community Health Week and the role of the physician than ever before.

The weekly meetings with Dr. Collins and Oliver Ebel continue. Through this liaison, the agency feels that measurable progress is being recorded toward the goals of this Information and Education Program.

Kansas Blue Shield

Staff Note: While Kansas Blue Shield is currently involved in promoting membership growth and refining operations in its regular business, as well as administering Medicare and Title XIX, proposals for National Health Insurance continue to flow into Congress. The impact of these proposals could alter the composition of health care prepayment as it is known today.

So that Kansas physicians may be kept updated on various National Health Insurance proposals before Congress, this "Grid" is being reproduced for your information.

Concept	Advocates	Benefits	Financing	Administration	Effects	
COMMITTEE FOR NATIONAL HEALTH INSURANCE PROPOSAL	Compulsory national health insurance for all Americans is an integral part of the national social insurance system.	The Committee for National Health Insurance (Committee of 100) chaired by Walter Reuther, president of the United Auto Workers.	Complete health care, but perhaps with drug and dental coverage excluded at the beginning.	Employee & employer pay other Social Security type taxes through the United States Treasury Department; public and private contributions for all other Americans total cost expected to be about \$40 billion a year.	An office within the Department of HEW, perhaps with Blue Plans as intermediaries.	A financial lever to restructure health care delivery and eliminate waste and duplication; strong emphasis on prepaid group practice & preventive health measures; free choice of physician; supplants most private health insurance.
LABOR PROPOSAL	A financial mechanism to pay for the costs for all people, much like the present Medicare program for the elderly.	AFL-CIO; Representative Martha Griffiths (D-Mich) as legislative sponsor.	"Hospitalization, physician services in the office, home or hospital; extended care as well as custodial care in nursing homes, home health services, outpatient and inpatient psychiatric services, eye exams and prescriptions" plus physicals or multiphasic screening tests.	Employee, employer and federal government share equally in cost, expected to be \$33 billion at start; employee and employer pay higher Social Security taxes; government would rely on general revenues.	By Department of HEW; no mention of intermediaries.	"Would not 'interfere' with clinical practice of medicine"; permits free choice of doctor & hospital, free choice between fee-for-service and capitation; requires cost-controls plus "incentives for moderating hospital charges."
A SENATE PROPOSAL	A compulsory health insurance system to initiate change in organization and delivery of health care that will eventually replace Medicare and most of Medicaid. Private insurers and providers of services could participate.	Senator Jacob Javits (R-N. Y.).	Medicare (part A & B merged) for elderly & disabled, 7/1/71. Extended to all 7/1/63, with maintenance drugs. Dental care for children under 8 and a diagnostic benefit effective 7/1/74. HEW Secretary authorized to contract with approved regional groups to provide more than national benefit packages.	Tax on employer, employee, and self-employed. Increased earnings base of \$15,000 for latter two. Graded contribution rates from 0.7% in FY-71 to 3.3% in FY-75 and thereafter. Needy and unemployed costs underwritten by Federal Government subsidy.	Secretary of HEW can delegate to State agency in accord with Federal standards or contract carriers or other organizations of providers. Cost reimbursement & incentive payment to reduce cost without impairing service.	Preserve the pluralistic strength of the present health care system and to provide significant incentives and leverage to move that system to greater cohesiveness and coordination.
GOVERNORS CONFERENCE PROPOSAL	Universal health insurance purchased from private insurance companies.	Gov. Nelson Rockefeller (R-N. Y.), plus the National Governors Conference.	Would enforce a floor for health coverage in employer groups; this same level of coverage would replace Medicaid for medically indigent.	Employee-employer contributions through payroll deductions for all workers; for self-employed and unemployed persons above the poverty level full payment by individuals; for those below poverty level, government would purchase private insurance; elderly remain under Medicare.	No change from present Medicare intermediary setup; private carriers continue as they do today.	"An aggressive program of hospital and medical cost controls."
A.M.A. PROPOSAL	An income tax credit plan of "universal scope, voluntary in nature and realistic in terms of total program costs."	American Medical Association; Representative Richard Fulton (D-Tenn.), Senator Paul Fannin (R-Ariz.) as legislative sponsors.	Medicare would remain intact for aged, but this new "Medicredit" plan would replace Medicaid for all people under 65; private insurance plans must qualify by providing 60 days of inpatient hospital service, plus full range of outpatient and physician services in hospital, home or office.	For a family earning \$5,000 or less, 100% credit on federal income tax up to \$400 of fees for private health coverage; credits scale down as income goes up; if family pays less than \$400 in taxes, government issues certificate to use in buying coverage.	No change; Medicare continues to be handled by intermediaries; private insurers handle their own participants under age 65.	No intent to effect change in delivery of health care.



Book REVIEWS

EMPHYSEMA: A DOCTOR'S ADVICE FOR PATIENTS AND THEIR FAMILIES by Fred A. Obley, M.D. Beacon Press, Boston, 116 pages, illustrated. \$7.50.

This book is very well written and easy to read. It describes emphysema from cause to diagnosis and treatment. It would be useful to any family having a member with emphysema.

It should be read by every doctor and nurse who treat patients with emphysema and is a "must" for every hospital with an inhalation therapy department. Every inhalation therapy technician needs to review this book at least once a year.

Dr. Obley deserves a special letter of thanks from the medical profession for this book.—*W.N.*

ACUTE RENAL FAILURE: DIAGNOSIS AND MANAGEMENT by Robert C. Huehrcke. C. V. Mosby Company, St. Louis. 343 pages, illustrated. \$19.75.

The book *Acute Renal Failure: Diagnosis and Management* adds a considerable amount of new information which the urologist can use. This book adds greatly to the urologist's understanding of the patho-physiologic abnormalities, particularly of acute renal failure. The timing for the use of dialysis is presented in a very complete manner. There has been marked information gathered by the use of renal biopsy at periodic intervals on many of these cases. This is of interest to the urologist. Many urologists are not performing renal biopsies.

I would consider this book as a very necessary one for the modern urologist.—*E.M.F.*

AIDS TO INDEPENDENT LIVING: SELF-HELPS FOR THE HANDICAPPED by Edward Lowman, M. F. and Judith Lannefeld Klinger. McGraw-Hill, New York. 800 pages, illustrated, \$39.00.

This is a very good reference book for all people working in all phases of medicine: doctors, medical assistants, physical therapists, occupational therapists, nurses, aides and even those who operate nursing and retirement homes. This book is sufficiently indexed, which is so important. Some of the subjects presented are: how to turn off the radio or television while lying in bed; how to put on shoes when you can't reach your feet; how to turn off the lamp with a touch to the shade; how to get into the bathtub easier; renting a car with hand controls; ways to see the U.S.A. or Europe on crutches or in a wheelchair, or without walking too far.

This publication answers many questions on how to live independently and should be available to all handicapped people, senior citizens and those interested in helping others help themselves.—*A.M.B.*

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LIBRARIES**

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HAPPY TO ASSIST YOU**

VOX DOX

To the Editor:

I thought the August issue of the JOURNAL of the Kansas Medical Society was a particularly good one. First, because of the Hertzler Lectures and second, because of the student essays by both Robert A. Catania and Dr. Henry C. Hodes.

I was a little disappointed, however, that bibliographies were not given. I saw a note that we could obtain the references by writing in but it would have looked better to me to have seen them right on the article.

Topeka, Kansas

KARL MENNINGER, M.D.

Since student theses are generally accompanied by much more extensive bibliographies than other articles, the Editorial Board decided some time ago, in the interest of economy of space (and consequently overhead), to utilize the present system. This is the first comment we have had, pro or con, and is the type of expression of opinion we seek. If other readers feel this is an undesirable economy, let us know.—Ed.

KANSAS STATE DEPARTMENT OF HEALTH

TOPEKA, KANSAS

Division of Disease Prevention & Control—Division of Vital Statistics—Kansas Morbidity Incidence
Summary of Cases Reported in June, 1970 and 1969

Diseases	June			January-June Inclusive		
	1970	1969	5-Year Median 1966-1970	1970	1969	5-Year Median 1966-1970
Amebiasis	—	—	—	10	1	5
Aseptic meningitis	—	3	—	4	6	—
Brucellosis	1	—	—	1	1	1
Diphtheria	—	—	—	—	—	—
Encephalitis, prim., infect.	3	—	1	7	3	3
Encephalitis, post-infect.	—	—	—	—	—	—
Gonorrhea	673	401	303	3,245	2,316	1,907
Hepatitis, infectious	45	14	19	257	147	147
Measles (Rubeola)	—	—	*	67	4	*
Meningococcal meningitis	2	—	2	3	13	9
Mumps	—	—	*	139	91	*
Pertussis	—	—	—	—	—	—
Poliomyelitis	—	—	—	—	—	—
Rheumatic fever	—	—	—	4	2	2
Rubella (German Measles)	1	5	*	51	37	*
Salmonellosis	7	11	15	84	78	92
Scarlet fever	2	1	2	69	23	52
Shigellosis	4	7	4	32	37	32
Streptococcal infections	508	25	102	2,311	1,575	1,575
Syphilis	117	203	127	669	979	609
Tinea capitis	5	5	2	16	25	26
Tuberculosis	20	18	20	110	106	118
Tularemia	—	—	—	—	3	1
Typhoid fever	—	—	—	—	—	1

*Statistics not available for 5-year median.

Woman's Auxiliary Page

Auxiliary Annie Returns

After about an eight or ten year absence from your JOURNAL, Auxiliary Annie makes a return appearance. She is your Kansas Medical Auxiliary correspondent, your other half. She's not so conceited as to say that she's your better half . . . even she knows better than that. In the first place, she wouldn't be so bold, and in the second, she doesn't really believe it anyhow! It just plain adds up to the fact that you're our guys and the auxiliary members are your gals.

We had a page in your JOURNAL some years back. The sportscar driving or motorcycle riding, young Stephen Kiley-type members won't remember it, but the Dr. Welbys will. The editors of your JOURNAL believe it would be nice if the auxiliary had a page again.

There are several reasons for this, but they all boil down to their wanting you to know what we are doing and to give you an opportunity to think of ways that we might help you.

Many of our doctors have little or no idea of what the auxiliary does, or is capable of doing. For instance, you may not know that we collected \$8,110.33 in funds for AMA-ERF last year. Or that we shipped approximately 22,000 pounds of drugs, soap, office and hospital supplies and equipment to World Medical Relief, Project Concern, and similar agencies for overseas shipment.

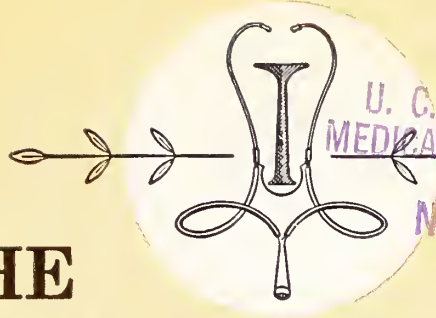
Of course, we won't deny that we like our social meetings, but we do put out a surprising amount of energy in credible ways. Our hard-working legislative and mental health committees will tell you that, and the medical society committees with which they have been working will testify to our ability and agreeableness in working towards your aims. *You* are our bosses, you know, not we yours.

Well . . . outside of home, that is. We still would like to think we run the show there and that we are your best girls, the ones you take to parties, or the ones to whom you look for your socks to be mended, your meals to be cooked and your offspring tended. We think, however, if you know what we are doing in the auxiliary that you will know what else we can do for you if you need us. Maybe your wife doesn't belong to our group and you can help us convince her what a really great bunch we are!

So, at least some future issues of your JOURNAL will include our page. It may have a news story about a project we are doing, or a feature about something or someone special. Maybe it will be a column like this, sort of an open letter from us to you. Whatever it is, we hope it will suit your fancy. Until then, so long, luvs. See you in print!

Yours,

Auxiliary Annie



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THE

Journal

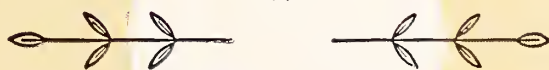
OF THE

Kansas

Medical

Society

OCTOBER
1970



VOL. LXXI
NO. X

in cardiac edema

Dyazide[®] Trademark

Each capsule contains 50 mg. of Dyrenium[®] (brand of triamterene) and 25 mg. of hydrochlorothiazide.

gets the water out

spares the potassium

Before prescribing, see complete prescribing information in SK&F literature or *PDR*.

Indications: Edema associated with congestive heart failure, cirrhosis of the liver, the nephrotic syndrome, late pregnancy; also steroid-induced and idiopathic edema, and edema resistant to other diuretic therapy. 'Dyazide' is also indicated in the treatment of mild to moderate hypertension.

Contraindications: Pre-existing elevated serum potassium. Hypersensitivity to either component. Continued use in progressive renal or hepatic dysfunction or developing hyperkalemia.

Warnings: Do not use dietary potassium supplements or potassium salts unless hypokalemia develops or dietary potassium intake is markedly impaired. Enteric-coated potassium salts may cause small bowel stenosis with or without ulceration. Hyperkalemia (>5.4 mEq/L) has been reported in 4% of patients under 60 years, in 12% of patients over 60 years, and in less than 8% of patients overall. Rarely, cases have been associated with cardiac irregularities. Accordingly, check serum potassium during therapy, particularly in patients with suspected or confirmed renal insufficiency (e.g., certain elderly or diabetics). If hyperkalemia develops, substitute a thiazide alone. If spironolactone is used concomitantly with 'Dyazide', check serum potassium frequently—they can both cause potassium retention and sometimes hyperkalemia. Two deaths have been reported in patients on such combined therapy (in one, recommended dosage was exceeded; in the other, serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage or other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving Dyrenium (triam-

terene, SK&F). Rarely, leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with the thiazides. Watch for signs of impending coma in acutely ill cirrhotics. Thiazides are reported to cross the placental barrier and appear in breast milk. This may result in fetal or neonatal hyperbilirubinemia, thrombocytopenia, altered carbohydrate metabolism and possibly other adverse reactions that have occurred in the adult. When used during pregnancy or in women who might bear children, weigh potential benefits against possible hazards to fetus.

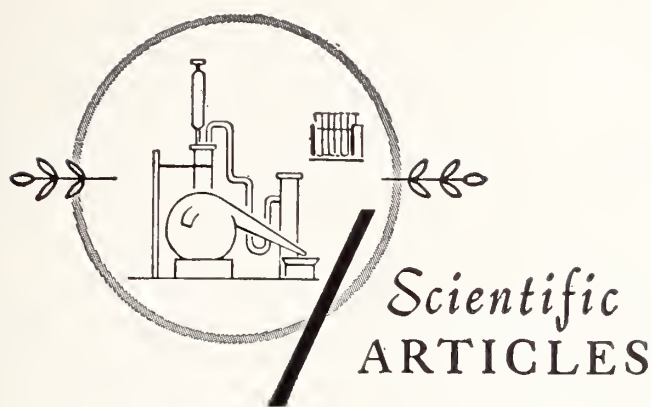
Precautions: Do periodic serum electrolyte and BUN determinations. Do periodic hematologic studies in cirrhotics with splenomegaly. Anti-hypertensive effects may be enhanced in post-sympathectomy patients. The following may occur: hyperuricemia and gout, reversible nitrogen retention, decreasing alkali reserve with possible metabolic acidosis, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), digitalis intoxication (in hypokalemia). Use cautiously in surgical patients. Concomitant use with antihypertensive agents may result in an additive hypotensive effect.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis; rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting (may indicate electrolyte imbalance), diarrhea, constipation, other gastrointestinal disturbances. Rarely, necrotizing vasculitis, paresthesias, icterus, pancreatitis, and xanthopsia have occurred with thiazides alone.

Supplied: Bottles of 100 capsules.

**SK
&F**

Smith Kline & French Laboratories



Techniques of Abortion

WILLIAM J. CAMERON, M.D.,* *Kansas City, Kansas*

WITH THE CHANGE of the Kansas abortion law effective July 1, 1970, and the far from remote possibility that the United States Supreme Court in the fall of 1970 will strike down existing restrictive abortion laws as vague and unconstitutional, Kansas physicians can expect applications from patients desiring abortions in significant numbers. If the experience of those of us at the University of Kansas Medical Center is typical of what Kansas doctors may anticipate, it is obvious that we have been seeing only the very top of an enormous iceberg composed of women who desire to have their pregnancies terminated. Whether more women are contemplating abortion because of its availability or whether these same women would have been aborted illegally in the past, I do not know. It is a moot point, at any rate, because the patients are undeniably with us and asking for (and not infrequently demanding!) termination of their pregnancies.

Despite the fact that effective contraception is available to all who wish it, some five million women in this country are not reached by physicians or family planning groups so that, in essence, contraception is denied them. Consequently, approximately 750,000 unwanted births occur in this country annually. A recent study indicates that one out of five births was reported as unwanted at the time of conception. In the poor, the figure is two out of five. It

is evident that abortion is increasingly becoming a "back-up" for contraceptive failures or failure adequately to protect oneself from the unwanted pregnancy. Unless a different scheme is elaborated for the processing of women through hospitals for abortions, and until paramedical personnel are trained to handle this mass of people (as seems likely), it appears evident that physicians and their hospitals will have to bear the brunt of this particular service. Leaving aside the moral, theological, and social questions of abortion it is unarguable that the physician owes one thing to his patients. If he is to do abortions he should do them skillfully, safely, as economically as possible and with little disruption of the life of the patient. Since the technique of abortion has never been an integral part of the medical school curriculum, or a part of training programs in obstetrics and gynecology (to say the least!), it is probable that very few physicians have ever had the opportunity to become skillful at this procedure. The purpose of this communication is to discuss the technique of termination of first and mid-trimester pregnancies.

The patient is initially referred to the Department of Obstetrics and Gynecology at KUMC by her family physician or obstetrician-gynecologist. Hopefully, the referral is accompanied by a letter from the referring physician supporting her petition for abortion, specifying in the letter which clause of the new law is applicable. The patient is then seen in the clinics of the university and a history obtained and

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physical examination done. Routine basic laboratory work is obtained, including CBC, urinalysis, serology, blood type and Rh factor. (Evidence suggests that an Rh negative woman can become sensitized to the Rh factor following therapeutic interruption of pregnancy, so our Rh negative patients are encouraged to receive RhoGam postabortally.) At this time a most careful abdominal and vaginal examination is performed. The uterine size must be established very accurately during this crucial examination. A uterus approximating in size one that is 14 weeks past the last menstrual period, that is, one which is palpable three fingerbreadths above the symphysis pubis, is the upper limit at which a D & C can safely be performed. If the uterine dimension and scheduled date of surgery are such that surgery can be accomplished before the uterus reaches this size, the patient is told to report with an empty stomach to the nurses' station on the appropriate floor at 7:00 a.m. on the day of surgery.

No bowel, vaginal, or perineal preparation is performed. Food or fluid is not permitted prior to surgery. Preoperative medication is generally not given. In the operating room, the patient is placed in the dorsal lithotomy position and general anesthetic, usually utilizing rapid induction with intravenous pentothal followed by nitrous oxygen inhalation, is administered. Immediately upon assuming induction of anesthesia, the perineum, vagina, and lower abdomen are scrubbed with a cleansing agent. The vagina is dried with a sponge. The bladder is not catheterized. A weighted speculum is placed in the posterior fourchette and the cervix is grasped at 11:00 o'clock and 1:00 o'clock with single tooth tenacula. These are placed vertically, penetrating through the full thickness of the cervical stroma. Experimenting with various positions for placing the tenacula have proved to my satisfaction that this is the way least likely to cause cervical laceration yet it still gives very good countertraction for dilation.

The uterus is not sounded prior to dilation. The physician should not be interested in the height of the fundus at this time, but concerned only with dilating the cervix. The Hegar dilators (much more satisfactory than the Hank) will accomplish this without difficulty in the vast majority of cases. Only in the very young girls or in the elderly primigravida patients has there been much difficulty in dilation. The cervix is dilated to a No. 13 Hegar dilator, following which the 12 millimeter tip of the suction curet is placed in the uterine cavity and attached to the suction tubing. The suction machine we have found most reliable is made by Berkeley Tonometer Company.* It builds up a negative pressure of approxi-

mately 55-60 millimeters of mercury in a very few seconds. Almost immediately, the amniotic fluid rushes through the tube. The tip is then moved gently back and forth rotating it slightly, "quartering the uterus," exploring for tissue. The first thing that appears are fetal membranes, usually followed by placental tissue and then fetal parts. In the very early pregnancy of eight and ten weeks it is difficult to differentiate the types of tissue obtained.

Suction curettage has made the termination of pregnancy extremely safe, fast and reliable, far superior to that of a curettage with a sharp instrument. The secret of the suction curet is to let the machine do the work and not try to use the suction tip as a true curet, i.e., a scraper. As the uterus is emptied, it will contract and begin to tug on the suction tip. At this point I generally spiral the suction tip, rotating it slowly as I gradually withdraw it. I have every confidence that the uterine cavity is now clean and empty. *Sharp curettage is totally unnecessary* and is probably even harmful, running the distinct possibility of creating endometrial sclerosis or Ascherman's syndrome. Twenty units of Syntocinon are given as a push IV dose and 20 units are placed in a liter of fluid and run fairly rapidly over the next two hours. The operation is terminated at this point.

The patient is removed to the recovery room until she is reactive and then returned to her room. At approximately 4:00 p.m. the same day, she is visited, the fundal height is checked, and she is dismissed with the advice to restrict her activity somewhat for several days. Coitus is prohibited for two weeks. If oral contraception is desired, it should be started at this point.

Complications following this procedure have been remarkably few. One patient suffered a penetration of the posterior wall of the uterus during the dilation, necessitating laparotomy. Three patients have developed an acute postoperative hematometra for which re-suction to evacuate the clots in the uterus was done. Two patients have had postabortal endometritis, but both were mild and treated on an outpatient basis with oral antibiotics. Approximately 35 of these patients have received their abortion under local anesthetic using paracervical and uterosacral blocks. This is quite satisfactory in the multiparous patient who is relaxed, easy to examine, and who is not terribly anxious about the procedure. For the younger girls, especially the nulliparous patients, general anesthesia seems in every way more satisfactory and humane.

Two procedures can be resorted to if the patient's uterus is past the 14 weeks size when seen and abortion is definitely indicated. The first is intra-amniotic injection of hypertonic saline; the second, extraovular

* Berkeley, California.

injection of the dye Rivanol* through a catheter passed into the uterine cavity.

In the first instance amniocentesis is performed by placing an 18g. spinal needle in the mid-lower abdomen approximately half way between symphysis and umbilicus. If the needle is placed intra-amniotically, fluid can be seen welling up. An IV connecting tubing is fixed to the hub of the needle and attached to a 50 cubic centimeters syringe. Two hundred cubic centimeters of amniotic fluid are drawn off and replaced with the same quantity of 20 per cent saline. This is not a particularly innocuous procedure. Intra-vascular injection of this salt solution can cause grave cardiovascular difficulties; deaths having been reported from this method of inducing abortion. There are several things that one can do to help safeguard the procedure: (1) Make very sure that the needle point remains inside the amniotic sac. The needle should not be moved once a free flow of fluid is obtained, although it can be rotated. As the amnion collapses, it may fall against the beveled edge of the needle, shutting off the flow. Rotation is permissible to relieve this, but the needle should not be adjusted in a vertical direction, else it slips extra-amniotically. (2) As the saline solution is being injected, one should observe the patient carefully for evidence of tasting salt, occurrence of a headache, abdominal pain, or even vague distress. The procedure should take just a few minutes and is not painful. (3) *One should not inject much more saline than the volume of amniotic fluid removed.* If this happens, it creates a positive pressure within the uterine cavity and the solution will be ejected back through the needle hole. This, intra-peritoneally, can act as a "reverse dialysate" with ascites formation, profound electrolyte disturbances, hypervolemia and circulatory failure. It is permissible to exceed slightly the volume withdrawn but not by more than about 50 cubic centimeters. The procedure is terminated at this point. The patient is asked to remain quiet for about an hour and is given a regular diet and full ambulation. When she begins to have good contractions, which usually occurs within 24 hours, she is placed at bedrest, an IV is started, she is given nothing by mouth. Her contractions are augmented by adding 40 units of Syntocinon to a liter of fluid running at 30 to 40 drops per minute. A response usually takes place in approximately six hours. The initial labor pattern distends the lower uterine segment and effaces the cervix. Then there is rapid dilation of the cervix and expulsion of the fetus. The placenta usually promptly detaches and it is our policy to do a gentle sharp curettage under heavy Demerol analgesia. This patient is dismissed about 24 hours later.

The Rivanol technique can be done anytime after 14 weeks of gestation. A Robinson catheter is charged with the dye so that all air is expelled from the system. *This is imperative* as air embolism has been reported during this procedure. The catheter is threaded through the cervix to the top of the fundus and, using an Asepto syringe, approximately 60 cubic centimeters of dye is injected. The catheter is doubled and a clamp placed on the end to hold in the dye, and a small pack is inserted in the vagina. The patient is allowed full activity. Some dye frequently escapes from the cervix. Labor usually ensues within 24 to 36 hours. Generally speaking, if there are not good uterine contractions 24 hours after the dye is injected, the procedure is repeated. The labor pattern is similar to that following the saline injection, lasting approximately six to eight hours.

The only complication with this technique is an occasional febrile response. None of these infections has been serious to date.

I realize that each practicing physician in Kansas must search his conscience for his attitude toward abortions and for his decision as to whether or not he will perform them for his patients. I am not attempting to influence anyone's judgment in this regard, but rather imparting the results of experience on a rather large abortion service of several months' duration. Many of the things that I have stated have been learned by trial and error. If the physician applies himself to abortions, and does them properly, it is a safe, rapid procedure which carries a much lower morbidity and mortality rate than a tonsillectomy. It can be done safely on an outpatient basis. It has been unnecessary to administer a blood transfusion to any patient undergoing abortion.

It is hoped that the above guidelines can help and aid those physicians who believe that abortion is a justifiable and proper medical procedure and who wish to perform them on those patients who, in his opinion and in the opinion of his consultants, merit the operation.

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Disseminated Intravascular Coagulation

A Practical Approach to Its Diagnosis

MARJORIE S. SIRRIDGE, M.D.,* *Kansas City, Kansas*

FORTUNATELY FOR ALL OF US, our blood normally remains fluid in the vascular system unless there is injury to blood vessels, at which time it is able to clot rapidly and to prevent excessive hemorrhage. Until recent years, hematologists and "Clotters," as they have been called, have been primarily interested in the problems of insufficient and impaired coagulation. However, with the widespread interest in thrombosis as a primary cause of death and the use of systemic anticoagulants, emphasis has shifted somewhat to problems of exaggerated clotting and the so-called hyper-coagulable state. The problem of disseminated intravascular coagulation actually involves both of these approaches.

Figure 1 shows the four different mechanisms which may be involved in producing an increased tendency to form intravascular thrombi: slowing or obstruction of blood flow, increased coagulability, trauma to vessel walls, and decreased fibrinolysis. Increased coagulability may result from a decreased anti-coagulant effect or from increased activity of coagulation factors or platelets. The amount of fibrinolytic activity is dependent on the balance between fibrinolytic and antifibrinolytic factors.

Under the pathological condition of disseminated intravascular clotting, one or more of these mechanisms are present to a sufficient degree that there is a widespread deposition of clots in arterioles, capillaries and venules. There may be a variety of initiating stimuli which act in different ways and at different stages of the clotting process. Primarily, these include damage to endothelial surfaces, changes in platelets which increase their tendency to adhesiveness and aggregation and the infusion of tissue thromboplastic material into the circulating blood. *Figure 2* shows how some possible specific initiating stimuli may act. Viruses, anoxia, temperature changes, and dietary lipids probably cause endothelial damage with resulting surface activation. Platelet aggregation may be stimulated by contact with injured endothelium, by such particulate matter as amniotic fluid, or by substances such as bacterial endotoxin and antigen-antibody complexes. Coagulation then oc-

curs by the slow sequential interaction of platelet material and at least nine coagulation proteins. Hemolyzed red blood cells, placental tissue, cancer tissue, and traumatized normal tissue may all release tissue thromboplastin into the circulation which brings about a more rapid formation of fibrin by the shorter "extrinsic" pathway.

Fortunately, the formation of fibrin is not a permanent affair and the body has many ways of disposing of unneeded fibrin. One of these is its enzymatic digestion by a potent plasma proteolytic enzyme called plasmin or fibrinolysin. Plasmin exists in normal plasma in the form of an inactive precursor, plasminogen, which can be activated in many of the same ways that the clotting process is activated. This plasminogen-plasmin system is integrally related to and similar to the blood clotting system as shown in *Figure 3*.

With any significant degree of disseminated intravascular coagulation, hemorrhage usually occurs due to the consumption of platelets, fibrinogen, and other clotting factors, the so-called "consumption coagulopathy." This may be further aggravated by the anticoagulant activity of the fibrinolytic split products which are formed and may not be cleared from the circulation for six to nine hours after clot lysis has taken place. Bleeding usually occurs where surgical, or obstetrical trauma has left an open wound, but may occur from all mucous membranes.

With this background one can then postulate this possible sequence of events in an episode of disseminated intravascular clotting:

1. Initiation of clotting by endothelial damage, platelet damage, the entrance of tissue thromboplastin into the circulation or a combination of these.
2. Beginning occlusion of microvasculature with microthrombi.
3. Circulatory shock with the slowing of blood flow, tissue acidosis and increased thrombus formation.
4. Local fibrinolysis and phagocytosis of coagulant materials and fibrin aggregates by the reticulo-endothelial system.
5. Hemorrhage due to consumption of platelets, fibrinogen and possibly other factors.

* Presented at the annual meeting of the Kansas Chapter, American College of Physicians, February 1970, Salina.

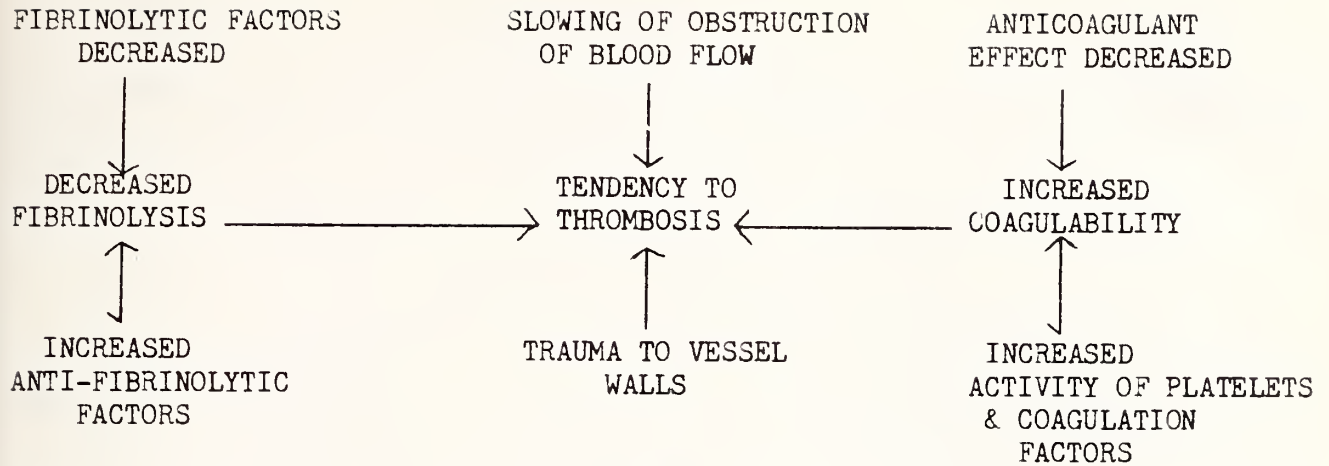


Figure 1

6. Possible end results:

- a. Minor episodes usually result in slight deposition and lysis of thrombi with reversible shock and no abnormal bleeding.
- b. Massive episodes almost always result in rapid death in irreversible shock.
- c. With moderate disseminated coagulation the patient may survive shock and develop a bleeding diathesis.
- d. Focal necrosis and organ failure will occur when there is insufficient fibrinolysis of thrombi.
- e. Occasionally there is exaggerated fibrinolysis.

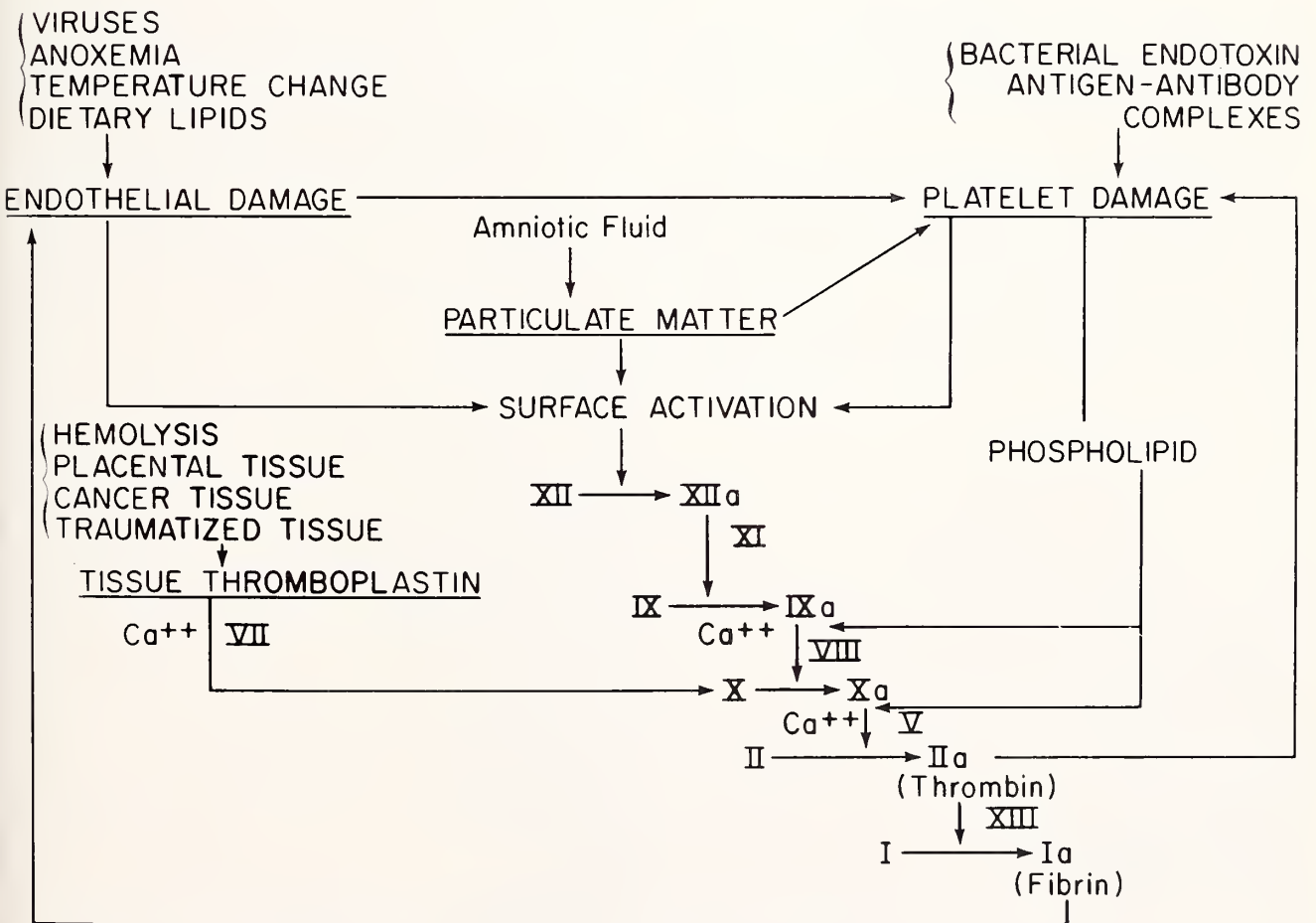


Figure 2

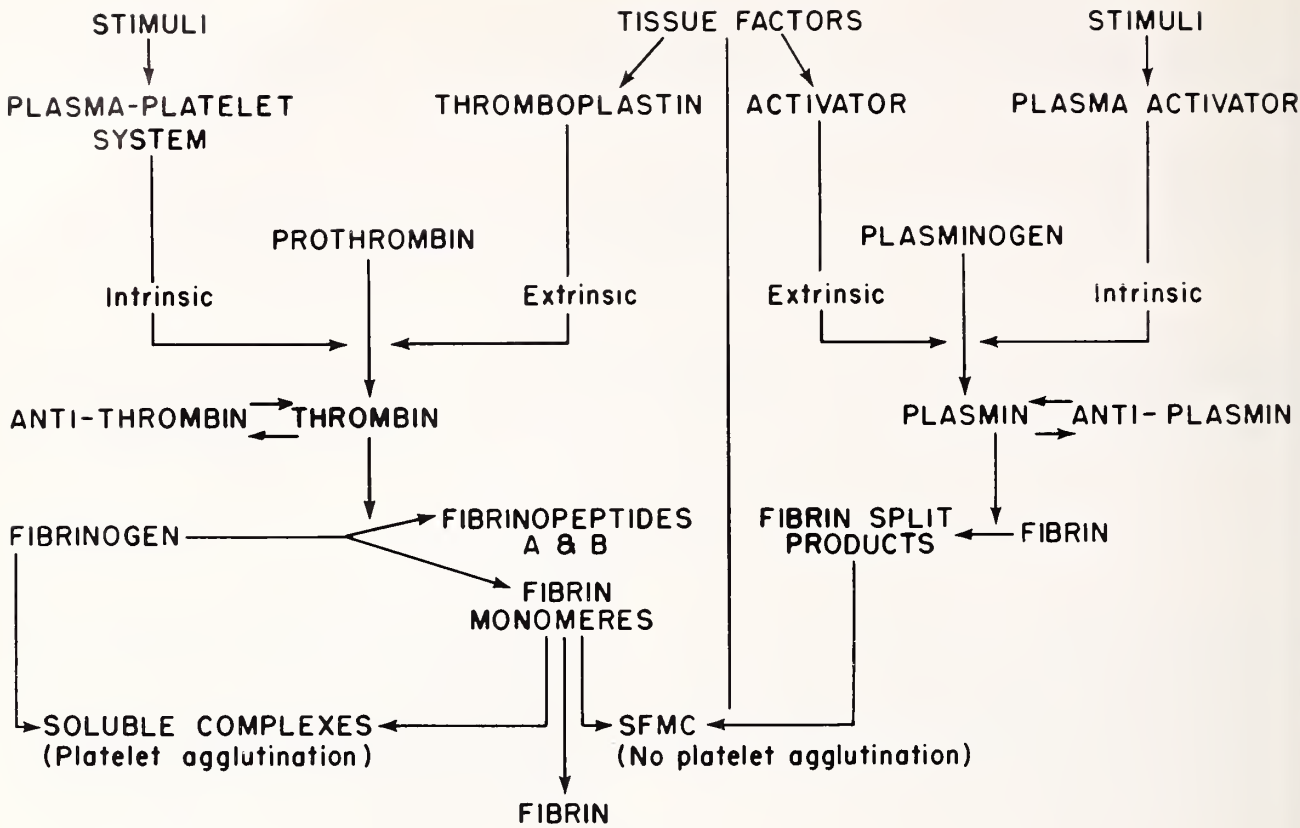


Figure 3

The ultimate result is thus dependent upon the strength of the initiating stimulus and the relationship of the rate of formation of thrombi to their rate of lysis.

It is important to remember that disseminated intravascular coagulation is an intermediary mechanism of

disease. Behind every clotting episode lies an etiologic factor which initiates the process. The following list includes substances which have been used experimentally to produce such disseminated clotting and some possible equivalent clinical syndromes.

Because of the difficulties encountered in recog-

<i>Experimentally Produced</i>	<i>Possible Clinical Syndromes</i>
Thrombin or thromboplastin intravenously	Abruptio placenta Dead fetus syndrome Abortion Trauma Surgery with tissue damage Disseminated malignancy Snake venoms Shock (surgical or infectious)
Hemolyzed blood intravenously	Incompatible blood transfusion Acute hemolytic anemia Amniotic fluid embolism Septicemia
Amniotic fluid intravenously	Shwartzman Reaction
Bacterial endotoxin intravenously	Immune diseases Thrombotic thrombocytopenic purpura Purpura fulminans Hemorrhagic fevers
Antigen-antibody complexes	Heat stroke Shock Hemangiomas Dissecting aneurysms
Viremia	
Thermal damage to vessels	
Blood stasis	

nizing and treating patients with problems of disseminated intravascular clotting and related situations, a program was instituted by the staff of Providence Hospital six months ago. It was decided that the following routine screening procedure would be followed by the laboratory whenever the blood bank received an order to cross match two units of blood for immediate transfusion.

1. If possible draw these samples before any blood is transfused:
 - a. One tube without anticoagulant
 - b. One tube with EDTA
 - c. Two tubes with Citrate or Oxalate anticoagulant
2. Do the following studies:
 - a. Evaluation of platelet number
 - b. Fibrinogen titer (semi-quantitative)
 - c. Clot lysis (preferably diluted whole blood clot lysis)
 - d. Prothrombin time
 - e. Partial thromboplastin time
 - f. Thrombin time
 - g. Fibrin split products (Fi test using serial serum dilutions)

Since that time, 25 patients have been studied according to this plan. The initial study was done in 21 patients only; however, in two there was an initial study and one follow-up study, and in two others there were multiple follow-up studies. Seven of the patients had malignancies, eight were victims of trauma, four had obstetrical or gynecologic bleeding, four had surgical bleeding, and two had gastrointestinal bleeding.

Ten patients showed no laboratory evidence of hemorrhagic abnormalities. *Table 1* summarizes the findings in the remaining 15. Four had definite evidence of disseminated intravascular clotting as shown by decreased platelet numbers, decreased fibrinogen titers, prolonged prothrombin and partial thromboplastin times, and the presence of fibrin split products. Their diagnoses were abruptio placenta, surgical resection of an abdominal aortic aneurysm, multiple fractures and carcinoma of the kidney with surgical exploration. One patient who had had a gunshot wound of the abdomen had evidence of disseminated clotting and exaggerated fibrinolysis with a decreased platelet count, prolonged prothrombin and partial thromboplastin times and a clot lysis time of less than five minutes. Three patients with fractured femur, carcinoma of the bile ducts, and a spontaneous abortion showed evidence only of slightly increased fibrinolysis (diluted clot lysis times of less than two hours). Abnormalities associated with the primary disease were found in patients with adenocarcinoma of the liver, ruptured appendix, and carcinoma of the pancreas. In four other patients, there was the

TABLE 1
15 PATIENTS WITH ABNORMAL FINDINGS

<i>No. of Patients</i>	
4	Definite evidence of disseminated intravascular clotting (DIC): <ol style="list-style-type: none"> 1. Abruptio placenta 2. Surgical resection of aortic aneurysm 3. Multiple fractures 4. Carcinoma of the kidney (surgery)
1	Definite evidence of disseminated intravascular clotting and increased fibrinolysis: <ol style="list-style-type: none"> 1. Gunshot wound of the abdomen
3	Evidence of slightly increased fibrinolysis: <ol style="list-style-type: none"> 1. Fractured femur 2. Carcinoma of bile ducts 3. Spontaneous abortion
3	Abnormalities associated with primary disease: <ol style="list-style-type: none"> 1. Adenocarcinoma of the liver 2. Ruptured appendix 3. Carcinoma of pancreas
4	Only abnormality a slight decrease in fibrinogen titer-slight DIC? <ol style="list-style-type: none"> 1. Skull fracture 2. Lacerations with rib fracture 3. TUR of prostate 4. Thoracotomy

single abnormality of a slight decrease in fibrinogen titer suggestive of minimal disseminated intravascular clotting (skull fracture, lacerations with rib fracture, TUR of prostate, and thoracotomy).

Table 2 gives a summary of the abnormalities noted and their rates of frequency. Tests for fibrin

TABLE 2
SUMMARY OF ABNORMALITIES

	<i>Per Determinations</i>	<i>Cent</i>
Platelet numbers	5/20	25
Fibrinogen titer	17/35	49
Clot lysis	4/27	15
Prothrombin time	12/32	38
PTT	12/32	38
Thrombin time	7/30	23
Fibrin split products	4/5	80

TABLE 3
CASE OF ABRUPTIO PLACENTA

	1-8-70* 11:30 a.m.	1-8-70 1:30 p.m.	1-8-70† 3:30 p.m.	1-8-70 8:00 p.m.	1-9-70 8:00 a.m.	1-10-70 8:00 a.m.
Platelets	136,000	100,000	85,000		75,000	68,000
Fibrinogen titer	0	1:8	1:16	1:64	1:64	1:256
Clot lysis	No clot	No lysis	No lysis		No lysis	
Prothrombin time (C12") ...	35"?	20.5"	15"	13.8"	12.5"	
PTT (C38"-40")	No clot	146"	51"	43"	34"	
Thrombin time (C15"-17") ..	No clot		47"		12"	
Fibrin split products	1:128				Absent	
Hemoglobin	11 gm.	10 gm.	12 gm.	12 gm.	10 gm.	9 gm.
Blood given	2 units	2 units	2 units			

* Heparin 7500 units IV.

† Cesarean section.

split products were done only when there was some evidence of disseminated clotting. The thrombin time seemed to be the least useful test, but this may have been due to the concentration of thrombin used for testing. Since this test should reflect decreases in fibrinogen and also the inhibitory effects of fibrin split products, a lower concentration of thrombin will be used for future testing in an effort to increase the sensitivity of the test.

The patient studied in most detail was a 24-year-old female who was eight months pregnant and suffered an abruptio placenta. She was treated successfully with heparin and whole blood. Initial coagulation studies were done at 11:30 a.m., approximately two hours following her initial symptoms of abruptio. As shown in Table 3, these revealed a complete absence of clottable fibrinogen, a decreased platelet count and the presence of a high titer of fibrin split products. Following the administration of intravenous heparin and whole blood, there was improvement in all parameters except the platelet count, and at the end of four hours there was enough clottable fibrinogen to give a titer of 1:16 (still less than 50 mgm per cent) and to allow the measurement of only slightly prolonged prothrombin and partial thromboplastin times. No increased lysis was noted in any of the formed clots. Since the patient showed no signs of going into spontaneous labor a cesarean section was performed at this time with only a slightly increased blood loss. The fibrinogen titer had risen to 1:64 (100-200 mgm per cent) two hours after surgery and was 1:256 (400 mgm per cent) 36 hours later. This data shows how important the initial and follow-up studies were in making the correct diagnosis of disseminated intravascular coagulation with resultant consumption coagulopathy and in monitoring the effectiveness of the therapy in preparing the patient for necessary cesarean section.

References

1. Corrigan, J. J.; Ray, W. L. and May, N.: Changes in the blood coagulation system associated with septicemia. *New Eng. J. Med.* 279(16):851, 1968.
2. Hardaway, R. M.: *Syndromes of Disseminated Intravascular Coagulation*. Springfield, Illinois: Charles C Thomas, 1966.
3. Jennings, P. B.; Simmons, R. L.; Sleeman, H. K. and Hardaway, R. M.: Hemodynamic, biochemical and coagulation alterations in endotoxin shock: Modification by induced tolerance in the dog. *Ann. of Surg.* 167:204, 1968.
4. Kowalski, E.: Fibrinogen derivatives and their biologic activities. *Seminars in Hematology* 5:45, 1968.
5. McKay, D. G.: *Disseminated Intravascular Coagulation*. New York: Hoeber Medical Division, Harper & Row, 1965.
6. McKay, D. G.: Disseminated intravascular coagulation. *Proc. Roy. Soc. Med.* 61:1129, 1968.
7. McKay, D. G. and Margaretten, W.: Disseminated intravascular coagulation in virus diseases. *Arch. Int. Med.* 120:129, 1967.
8. McKay, D. G.; Margaretten, W. and Csavossy, I.: An electron microscope study of the effects of bacterial endotoxin on the blood-vascular system. *Lab. Invest.* 15:1815, 1966.
9. McKay, D. G.; Margaretten, W. and Csavossy, I.: An electron microscope study of endotoxin shock in Rhesus monkeys. *Surg. Gynec. & Obstet.* 125:825, 1967.
10. Merskey, C.; Kleiner, G. J. and Johnson, A. J.: Quantitative estimation of split products of fibrinogen in human serum, relation to diagnosis and treatment. *Blood* 28:1, 1966.
11. Merskey, C.; Johnson, H. J.; Kleiner, G. J. and Wohl, H.: The defibrination syndrome: Clinical features and laboratory diagnosis. *Brit. J. Haemab.* 13:528, 1967.
12. Seaman, A. J.; Lutter, L.; Moffat, C. A. and Hueber, B. E.: Induced intravascular thromboembolic phenomena. *Arch. Int. Med.* 119:600, 1967.
13. Sohal, R. S.; Sun, S. C.; Colcolough, H. L. and Burch, G. E.: Heat stroke. *Arch. Int. Med.* 122:43, 1968.
14. Sirtidge, M. S.: *Laboratory Evaluation of Hemostasis*. Philadelphia: Lea & Febiger, 1967.
15. Teger-Nilsson, A. C.: Studies on tissue thromboplastin, thrombin and fibrinopeptides in intravascular coagulation. *Acta Physio. Scand.*, Supplement 319, 1968.
16. Thal, A. P. (ed.): Symposium on the role of intravascular coagulation in the immediate and late care of the severely injured person. *J. of Trauma* 9(8):645, 1969.
17. Thal, A. P., et al.: Shock, A Physiologic Basis for Treatment. In press. Chicago: Year Book Medical Publishers.

Aquarians and Antiquarians

... the Generation Gap and Changing Events in Medical Education

C. ARDEN MILLER, M.D.,* *Chapel Hill, North Carolina*

Introduction

ON APRIL 24, 1970, a student-faculty convocation was held in Battenfeld Auditorium at the University of Kansas Medical Center, honoring the Emeritus Faculty of the University of Kansas School of Medicine—those living and those whose widows lived in the area. Individuals honored were as follows:

- Michael Bernreiter, M.D.
Assistant Clinical Professor of Medicine
- Charles C. Dennie, M.D.
Clinical Professor of Medicine (Dermatology)
- Hugh L. Dwyer, M.D.
Clinical Professor of Pediatrics
- Ralph W. Edwards, D.D.S.
Assistant Clinical Professor of Surgery (Dental)
- Edward H. Hashinger, M.D.
Professor of Gerontology and Medicine
- George V. Herrman, M.D.
Associate Clinical Professor of Pediatrics
- Robert M. Isenberger, M.D.
Professor of Pharmacology
- Ralph H. Major, M.D.
Professor of Medicine and History of Medicine
- Miss Sara Patterson, R.N.
Associate Professor of Nursing Education
- Paul G. Roofe, Ph.D.
Professor of Anatomy
- Richard L. Sutton, Jr., M.D.
Clinical Professor of Otorhinolaryngology
- Galen M. Tice, M.D.
Professor of Radiology
- Peter T. Bohan, M.D.
Professor of Medicine
- Ralph I. Canuteson, M.D.
Associate in Medicine

Sam E. Roberts, M.D.
Professor of Otorhinolaryngology

LaVerne B. Spake, M.D.
Clinical Professor of Otorhinolaryngology
and Hearing and Speech

H. B. Latimer, Ph.D.
Professor of Anatomy

These individuals are well known to many members of the Kansas Medical Society. To those members who are graduates of the University of Kansas Medical School, they have a very special nostalgic meaning.

C. Arden Miller, M.D., former Provost and Dean of the University of Kansas Medical Center and currently Vice Chancellor of Health Sciences at the University of North Carolina, was invited to give the principal address for this special occasion. The title of Dr. Miller's address, "Aquarians and Antiquarians," is boldly intriguing, as he addresses himself to the Age of Aquarius and at the same time to the academic contribution of this distinguished group of professors emeriti. Dr. Miller's address is timely and appropriate to all of medicine; it approaches in a bold and forthright manner the generation gap and changing events in medical education in our society.

This event, and Dr. Miller's address, was well received by those in attendance. It seemed appropriate to share it with you through the JOURNAL OF THE KANSAS MEDICAL SOCIETY.

JACK D. WALKER, M.D.
Associate Dean KUMC

Returning to this medical center and to dear friends is a sentimental journey for Helen and me. It is nearly four years since we left here; the 15 years we lived in Kansas is the longest time either of us has lived continuously anywhere. We are a wandering family.

We have lived and worked in enough parts of the country to know a little of the best that many have to offer. One of the best this place offers is a basic

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honesty of personal relationships. People's eyes are clear and their intentions straight. One can expect to be believed, and can expect to believe what he hears and sees. Motives are what they seem to be, and agenda are open.

Every place has its abundant virtues. We delight in those of our new home and friends and work: our roots are deep in Chapel Hill, but we are pleased to be back among old friends for this happy occasion.

It is indeed a happy time for antiquarians. For you honored today, happiness is a reunion of old friends—or even of old enemies with animosities drained away. Happiness is the reminiscence of old triumphs, ambitions and ideals; it is the carefree humor and good cheer that mellow old frustrations and delight past accomplishments. It is also the satisfaction, perhaps touched with a little smugness, of watching new champions espouse old causes, and search to reglue ingredients that held together well enough in years past. Happiness is the inspiration that people of accomplishment give their successors. All of you that we honor today deserve these rewards, and many more.

Dr. Ralph Major, not here today, won eminence in several careers and in many ways. Much of the world knows of this medical center through his fame.

Ed Hashinger taught many things. One of them was that the pursuit of excellence does not need to be a somber undertaking—maybe not even a righteous one.

Mary Roberts can be grateful, on Sam's behalf, that concern for nutrition is finally achieving the attention he knew it deserved a decade ago, when others acted as if all those problems had been resolved with the proof that pellagra was caused not by a virus but by a vitamin deficiency.

The most remarkable feature, to me, of this meeting of emeritus professors is that my vision of all of you is still one of hard productive work. I find it difficult to realize that Paul Roofe, Ralph Edwards, George Herrman and Sara Patterson are in fact retired—retired indeed. I find it easier to believe that you are busy, active and productive in pursuit of new ventures.

My purpose here today is not to catalogue your achievements, important and fascinating as that endeavor would be. I wish instead to take guidance from your example, to search for clues toward continued excellence in medical science, medical care and medical education. It is a search shared by every medical school and university in the nation, and I speak without special reference to your school or to mine.

What is the guiding principle we seek? I submit it is the courage you showed to depart from estab-

lished traditions on behalf of new patterns of medical education, bringing the best experiences and best science available to the problems of our day. This is *relevance*, a matter of concern as great to times past as to this day. What were your innovations, how well do they serve us now, and what new patterns may be required in order to sustain relevance with excellence?

In launching this analysis I am reminded of a story about a man who in his youth survived the Johnstown flood. That accomplishment left on him a permanent trauma. For the rest of his life he remembered how the skies darkened, the rains fell, the waters rose, and the havoc raged. He recited the sequence of events, and his understanding of them, to every person and to every audience he could muster throughout a long and troubled life. Finally, an old and still a worried man, he came to his just rewards. As he passed through the heavenly gates Saint Peter asked what especially might they do to contribute to his happiness. His face lighted with appreciation, and he responded that he really would like to have a few friends assembled so that he could share with them the benefits of his wisdom and experience on the Johnstown flood. In due course the heavenly host was assembled and our happy survivor climbed to the podium to relate once again how the skies darkened, the rains came, and the waters rose. At that point the presiding archangel softly tapped his shoulder and whispered, "Remember, Noah is in the audience."

What did you Noahs, you happy antiquarians, do for medical education? You gave greater emphasis to learning than to technique, to inquiry than to dogma. You established medical education in the university style with emphasis on rigorous academic standards at the graduate level. You selected students carefully, not only for their professional promise but for their readiness to pursue graduate studies. You reconstituted medical faculties to consist predominantly of career teacher-scientists such as yourselves. You established the themes that medical care must be based on thorough knowledge of biomedical science, and that successful medical education must emphasize both sophisticated laboratory work and extensive clinical experience. Your teaching hospitals became the crowning glory of advanced medical care and your house officer programs educated young physicians who were the equal of the best in the world. Your university medical centers became loci of the highest quality medical care, influencing and elevating the standards of care among practitioners and hospitals in surrounding areas. The hospital changed from a shunned institution of last resort to a central facility for the delivery of medical care.

Probably the greatest triumph in all of medical education was achieved in the excellent clinical clerkship. Here a good teacher, a concerned patient, and a dedicated student were combined in a situation of learning and service which clearly worked to the advantage of all concerned. The clinical clerkship is best described with that often cited and important analysis of medical education presented ten years ago by Dana W. Atchley at this medical center. He described the clinical clerkship in medicine as "the most fruitful course in the four years of undergraduate medical education—the keystone of the arch."¹

These were important educational and medical accomplishments which represented a radical departure from previous patterns, but they are not now enough. The greatest disrespect we can show these patterns is to attempt to preserve them in circumstances where they no longer suffice.

For some among us we are in a new age: the age of Aquarius. What does that mean? Aquarius is the water bearer. His urn pours water as an offering to others: an altruistic wish. Aquarians go to extremes to preserve and pass on all that will benefit mankind.

We could be Leos, symbolic of courage and protective strength; uncertain times call for these qualities. Our time might have been characterized by the twin fishes of love and beauty; a new morality is associated with each of these blessings. We might even find cause to emphasize the mischievous love of Capricorn. Or better yet, with our miracles of technology, that enable us to scratch at the moon and to discard failing hearts for stronger ones, why did not the young people select Scorpio, to accentuate learning and wisdom?

But no, they stood naked and hairy on a New York stage and launched with song the Age of Aquarius. It's a pity the meaning of the words penetrates with such difficulty, in part because of our preoccupation with the hairiness and the nakedness. This preoccupation will be penetrated, there is no doubt. If not by poetry, then by harsh words; if not by harsh words, then by harsh deeds.

The excellent professional and educational styles, established so lovingly and so arduously by many of you whom we honor today, and cherished and preserved by many of us as your successors, were a major achievement of this century. This style met pressing social needs; it was in harmony with the times; it was brought about only after great hard work to break away from the nineteenth century apprenticeship system of medical education with its slavish imitation of error as well as skill, and with its almshouse traditions. Our twentieth century style has been one to sharpen medical intellects to such bright

fine points that they can touch at the very center, both figuratively and literally, of disordered brains, kidneys and hearts. And we have searched out the very best specimens of our youth to work with us. Medicine has not been the calling, as was characterized half a century ago, of those too stupid for the law or too immoral for the pulpit. It attracts the brightest, the strongest, and the most moral. And they don't always like what they find. They strive to change it, as our beloved Antiquarians, whom we honor today, strived with success to change what they found.

The striving goes on on every campus—yours, mine, and our neighbors. Its ubiquitous nature does not make it easier to endure.

But let me remind you of some of the circumstances you people faced in medical education and the ways you strived to changed them.

I quote from Flexner's report of 1910, with appreciation to Bob Hudson for giving me that book which I still cherish.²

At the University of Kansas there is no uniform method of making or keeping records.

Kansas Medical College relies almost wholly on three hospitals, by which to get its total of nine to ten hours instruction weekly—six free beds are reserved for medicine.

Utterly destructive of good habits of observation and treatment must be a dispensary like the Northend Dispensary, Kansas City, attended by students at the State University; equipment and records are alike defective and confused.

The pathologist is expected to eke out his income by outside work.

The dissecting room is indescribably filthy; it contained in addition to necessary tables, a single badly hacked cadaver, and was simultaneously used as a chicken yard.

This was medical education in Kansas vintage 1910. It was no worse here than in other parts of the country. It was the foundation on which you built a great medical school, which in most respects was far better than those in other parts of the country. I do not suggest that you were sufficiently antiquarian to have begun your work at the University of Kansas in 1910. But indeed I do suggest that during the 1920's, 30's and 40's you struggled with success to build a great medical center out of impoverished beginnings.

Some of the things our young medical aquarians find in medical schools today are to them no less impoverished, and in other ways no less grotesque than those described by Flexner in 1910. Aquarians seek to change these circumstances in the honored

tradition you established, and seek to pass on only what is best for mankind. They seek to do it sometimes with poetry and sometimes with harsh words, and always with hard work and intensity. So far there have been on our medical campuses few harsh deeds; banks have been bombed but, mercifully, not outpatient departments. You and I gave credence to such acts of violence, and even in part perpetuated such a violent American tradition of confrontation, with our romantic, best-selling novels of young physician-heroes who bombed the town's leaky sewage system in order to interrupt a typhoid epidemic.

Our present systems of medical care and medical education are leaky in other ways, and with consequences that are as devastating as typhoid. What do the best of our young people see when they come to work with us? Here is some poetry, and some harshness, written in September of 1969 by Chip Smith, a disillusioned medical student who had successfully completed three years of medical school at the University of Pennsylvania and then withdrew with this statement presented to his executive faculty and deans.³

... the reason for the separation is straightforward: to continue at Penn is to continue exploiting poor people, primarily blacks, for narrow educational ends. The human measure of this exploitation is brutality. All of your medical methodology—your rationalizations, little better than lies—works to blind us to the ugly reality.

The doctor-patient relationship practiced in your hospitals, which you expect me to honor and emulate, is a brutal relationship. It is true that everyone suffers—medical students: kept off balance, made to feel guilty about their lack of knowledge, constantly caught up in meaningless busy work; doctors: overworked, secure only in their professional image, harassed by patients and workers whose hostility they will never understand; and patients, rich and poor alike: ignorant about their own bodies gone haywire, fearful of death, desperately struggling to believe in their white-coated saviours, trapped in an environment that is death itself made visible: sterile, efficient, uniform, mechanical, all warmed over by a reassuring bedside-manner smile.

Everybody suffers, but the fact remains that the poor, especially blacks, suffer more.

And I have had my fill of putting it to blacks. I learned to draw bloods on old black ladies. I learned to do pelvics on young black women. I learned to do histories and physicals on black bodies and on a few wrinkled rundown white ones. Now, in order to learn something about primary care, about long-term outpatient care, I am faced again with waiting black faces in the hospital clinics. I am forced to participate in a system providing fragmented second rate care in the present, while loudly proclaiming the best possible care for future patients (mostly white, suburban folk, of course—i.e., if you don't end up having no patients at all, as in research, public health, or administration).

I don't know Chip Smith. Maybe he's a sick young man. Maybe we can discount much of what he says and feels, because he's naked. On the other hand, maybe we are naked, when all along, like the emperor, we believed ourselves to be elegantly clothed in science and technology.

Chip Smith is not the only medical aquarian. Another said the following at a clinical pharmacy seminar on February 14, 1970.⁴

The American health industry is probably the most completely producer oriented industry in this country today. . . .

The health service industry in the United States is organized and operated, not primarily to serve the health needs of the American consumers. The health service industry in this country is based on a nineteenth century principle of free enterprise for the purpose of profit making for the producers of health services. The health needs of American consumers, given the structure of the nonsystem, are secondary.

Furthermore, the medical practitioner must have an absolute monopoly control over the production and distribution of health services. The doctors control the medical schools, they control the hospitals, they control admission to the profession, they control the specialty boards. Of course they dispense the medical services as well as determine the purchase of related services such as x-ray, laboratory tests, prescription drugs and appliances and the like. Through their professional associations they have the dominant voice in local communities and in the states in the area of health care. Given the organization and operation of the health care industry, and the almost exclusive control of their industry by medical practitioners, it is not surprising that the medical profession has prospered more than other professions, and that the economic position of members of the medical profession has advanced at a more rapid rate than that of other professions. Nor is it surprising that the consumers of health care have not, despite the fact that the American people spend more on health care than any other nation in the world, received quality care at reasonable cost for all who need that care.

For the consumer of health services, this has become an intolerable situation. It cannot continue. The question is not whether changes in the coming decade are going to give consumers a significant voice in the production and delivery of health services. That is going to come by 1980. The question is, by what means the changes are going to take place.

That aquarian is no youngster. He is a professor in one of our great universities. Maybe he, too, is naked—an irresponsible, academic revolutionary. But maybe we should listen. Maybe it is we that are naked, like the emperor.

There is evidence beyond testimonials, which may help define our nakedness. You all know by now the dreary recitation of statistics. You know of our high infant mortality rates. You know of our high

rate of rejection of young men presenting themselves for military service. (Parenthetically, when the United Kingdom faced a similar high rejection rate, she developed a superb school health service. That was in 1904, after the Boer War.) You know of our disappointing life expectancy rates. You know of our survival rates from cardiovascular and other dread diseases, which are less favorable in this country than in many others. Depending upon which index of good health and good medical services one chooses to cite, evidence can be accumulated that any of 15 to 30 other nations enjoys better health than this one. Many of these countries we characteristically regard as less well developed than our own. In matters of health and health services we are truly an underdeveloped country.

Until recently we minimized the role of medical care in the genesis of this sorry record and attributed it instead to our twin national disasters of poverty and racial discrimination. As critical as these factors may be, we cannot entirely duck medical responsibility. Even middle-class white people are not as healthy as their counterparts in other countries. What can be done about it?

Fundamentally, these are issues of public services, closely related to higher education, but not a function of it. Much attention focuses on one of the relationships: health manpower. It would be an easy solution to our national problems if health care could be substantially improved by producing more doctors, or by producing a different kind of doctor, or by distributing them about the country in a different way. It would be nearly as easy if we could develop more and different kinds of medical auxiliary professionals to assist the physician. There is absolutely no reason to believe that these mechanisms in themselves will solve our problems. More manpower is not a sufficient response to the health crisis. We, in fact, have no idea how much additional manpower we need, nor do we know how that manpower should be distributed among the various providers of services. We can trust no available data on how much we should increase our educational output. I am certainly prepared to urge that we must increase it; the medical school at Guadalajara, Mexico, has more of our students enrolled than any of our own schools, save five. But we cannot approach the problem of health services by counting professional heads. What counts is professional services.

There is ample reason to believe that an unlimited amount of additional manpower working only within the constraints of existing service mechanisms would still be inadequate to meet the health needs of our nation. In fact, this country ranks among the most favored in the world in the number of physicians we have as compared with population. And in

recent years the ratio has dramatically improved, but we have not improved in effectiveness of medical services. What are the other essential ingredients to solve our problems?

Clearly, although one of them will be additional expenditures, we know that additional money spent in the context of services as they are now available will not substantially improve the situation. If the nation has learned anything from the experience of Medicaid and Medicare it is that increased money to buy services, which aren't there, will do little except to inflate costs. We need an additional amount of money to buy services, but only if aggressive steps are taken to extend the nature and availability of the services themselves. This point is especially important in relation to the growing expectation that we shall have within a few years a national compulsory health insurance program. If this program is enacted without the concurrent enactment of new mechanisms to provide health services, we can expect our present inadequacies to continue with even a higher price tag attached to them.

In my view, the new services must be organized and provided not at the national, but at the state and local levels. It is uniquely characteristic, in the American tradition, that government provide essential services which are not met by other means.

Those of us concerned about medical education would do well to review and anticipate what the new patterns of service might be. It is for these patterns that we are providing educational opportunities for young people today. In my view, the highest priority should be attached to improving those services, now not adequately operative, for which mechanisms are already established.

The school systems of the nation should be mandated not only to examine children for physical and learning defects but to provide mechanisms, in cooperation with other providers of health services, to *correct* those defects and to maintain health in the school children of the nation. Comprehensive school health programs, designed to *provide services*, in addition to present screening functions, would need to be financed with state funds, would need to meet well established standards of medical care, and would need to be planned locally in harmony with the services of health departments, hospitals and clinics. This emphasis is in keeping with an important new hallmark for all kinds of medical services. They must be taken to where the people are—in their homes, in their schools, at their jobs. We can no longer expect the public to come to our medical centers and to seek out services in patterns which were designed to suit professional convenience, but which have become so cumbersome that they serve now, neither the convenience of the consumer nor the professional.

Minimal standards for occupational health should be established. And when special health hazards are identified, employers must be required to provide for their workers not only means for identification of health problems but means for their treatment and correction. In such instances, employers must be required to participate in the cost of comprehensive health maintenance plans for their employees.

Minimal standards of service should be established for local health departments. These services might include those provided by home health aides, nutritional aides, midwives, public health nurses, family planning workers, and additional physician and nursing staff as may be dictated by the unique geographic and population characteristics of the area served. Citizens of our nation who are concerned about good health must be as much involved in the affairs of their board of health as they are in the affairs of their board of education. States should establish minimal standards of staffing and service for all health departments and should assist in providing the funds necessary for their services.

Medically indigent people must be given financial assistance to pay, not only for the purchase of health services, but for the enrollment in health maintenance units, a term rapidly replacing both in concept and function, the prepaid group practices. This is the new Category C of Medicaid and Medicare proposed by former HEW Secretary Finch.

The benefits of prepaid group practice are too well documented not to be made more extensively available. They are efficient and economical; they are one of the few programs in the nation that emphasize maintenance of health rather than correction of defects and illness. In order for prepaid group practices to remain solvent, strenuous efforts must be made to prevent unnecessary hospitalizations. Maximum attention is paid to ambulatory and home care. It is an important observation that appendectomies are done much less frequently among the enrollees of prepaid group practice than among the rest of the nation, although as far as can be determined the incidence of appendicitis is the same. Prepaid group practices provide a definable system subject to scrutiny, easy identification and modification. No other system has provided such careful records of its accomplishments. The best prepaid groups serve as a model for the rest of the nation in the maintenance of superb unitary medical records. There is good continuity in care on both inpatient and outpatient bases. Consumers can understand the system and can obtain ready access to it. One cannot really argue with a 25-year success story. Prepaid group practice clearly has an important place in this country's future

for improved health services. It is obviously the right answer for some people in some situations.

Equally important to consider are the comprehensive neighborhood health centers. Experience with these is not so extensive, but again, for some people in some situations, superb services are provided when no other mechanism has worked. The comprehensive neighborhood health centers (a number of states are now attempting to establish this concept on a semirural basis) make three unique contributions to previous patterns of care. The first is that careful attention is given to environmental health by the same staff and in the same context as curative and preventive health services. The elderly patient recovering from pneumonia does not return to unchanged and inadequate home circumstances to develop a recurrence of his pneumonia. A home health aide goes with him, and, if necessary, an attorney, to work with the landlords to make certain that housing is improved. Comprehensive neighborhood health centers have established vigorous programs of rat control, of recreation, and of improved nutrition.

The second major benefit has to do with the development of the indigenous health worker to assist in interpretation and history taking and to act as advocate to the patient, assisting his access to services. For a decade or more we have talked about such auxiliary manpower. In no place has it worked as effectively as in the comprehensive neighborhood health center, where people from the community are selected for special training and returned to the same community to offer services to their neighbors.

And, finally, an important contribution of the comprehensive neighborhood health center is the concept of consumer control. We need to say more about this. People whose lives and welfare depend upon public services, and public agencies will control those services and those agencies. A Mrs. Birnbaum from the Puget Sound Prepaid Group Practice System, which is a system entirely owned, operated and controlled by consumers rather than by professionals, made her case before the Health Forum in Washington in February. She emphasized to the group that consumer control over professional services is a typically American contribution to democratic governance. It is not alien, it is not disloyal; it is typically American. Our educational systems are not controlled by teachers; they are controlled by lay people through the school boards.

Our legal system is under lay control with lay juries. Our law enforcement officers are subjected to lay authority. Our military forces are under lay control. (Harry Truman, where are you now that we need you?) There is a growing insistence that medical services, as well, must come under community control. This has already come about, for the most part,

in community hospitals which in an earlier decade were dominated by physician trustees, but which now are almost entirely controlled by lay members.

Mrs. Birnbaum went on to establish her case that lay control over professional services is not only typically American, it is consistent with the highest standards of professional performance. We have seen this in our best health departments and our best prepaid group practices, in our neighborhood comprehensive health centers, and in too many other examples of superb medical care to claim that doctors, unique among all other professionals, can be responsible only to other doctors.

Admitting that in this diverse country we shall need diverse mechanisms for providing health care, it is not impossible to speculate that prepaid group practices, in combination with comprehensive neighborhood health programs, funded by national programs of compulsory health insurance, and fortified by sound school health, industrial health, and community health programs may go a long way toward meeting the health needs of the country.

What do these developments mean in terms of medical education? Public service is not, except in limited ways, a university responsibility; but it is a university *problem*. For at least two decades we have urged the public to give us their support, and by so doing, to receive the rewards of improved health. It was not entirely a false promise; the rewards of improved understanding of biological science are real. But the promise was not complete. We should have urged, and contributed to, improved understandings of other essential ingredients of good health—such as the delivery of essential public services. At this point we can be more concerned on how the public can benefit from the accumulated wisdom of the past decades than how it can benefit from today's new discovery.

But the university's real concern for new patterns of public service is how we can participate in them, or have access to them, so that our students may gain experience in the professional styles, and with the colleagues, and patterns, with which they may later be working. The patterns I have described to you are not conjectural; they are not anticipatory; it is not a matter of whether or not we approve of them. They are here; and our students need experience in them, every bit as much as they need experience in a referral hospital.

School health programs, industrial health programs, health departments with home health services, prepaid group practice with its emphasis on health maintenance, and comprehensive neighborhood health centers with emphasis on environmental health and consumer participation, are all necessary learning

experiences. It may be far more important for students to rotate through different systems of medical care than it is for them to rotate through the clinical services of different academic departments. We must re-examine that cherished symbol of excellence for medical education in the twentieth century: Dana Atchley's Clinical Clerkship. As important as it has been, it may now be the sacred cow of medical education, a deterrent to change, and an anachronism as a model for care. The clerkship, as we now schedule it, perpetuates a concept of services bound to hospital beds; it has never worked effectively in any other setting. It perpetuates physician dominance, not only over patients but over other providers of services, and over students as well. It does not serve well either our new educational interests or our patients' new concerns. It fragments services and perpetuates partial medical care. Again, it is today far less important for our students to rotate through various hospital specialty services, representing our own professional interests, than it is for them to rotate through different patterns of delivery of health care, on each of which will be represented all of the necessary medical and health service specialties.

To my mind, it is this which represents our greatest challenge, as we move from those superb patterns established by the antiquarians among us and strive to achieve those ideals of the new aquarian age. The degrees of freedom in a university for bringing about change are small, but they are greater than we have exercised. We must use our talents, our flexible resources, to establish new patterns of care; at the very least, those of already proven value and acceptability—some of them not, in fact, so new. I would hope that in the future we can take courage to develop *new* patterns, rather than to adapt established but neglected ones. We will need them for this diverse and complicated country. But right now we must establish in our educational programs a complete spectrum of different kinds of public service patterns in which our students can participate, or else revert to purely didactic, rather than participatory learning. The longer we delay implementation of these important developments the more we invite control and influence over higher education by outside interests which will insist upon glib, useless solutions to our problems. Medical schools which complain that they cannot expand their enrollments more rapidly than at present, and which complain that more doctors working in existing patterns will not actually improve services, must either live with those complaints or develop bold changes in our service programs in as radical a fashion as the bold changes which were made in the first half of this century.

All of you honored here today must forgive my burdening you with our problems of the moment when it would be more fitting to honor you with tributes of your considerable successes in having successfully coped with many other equally pressing problems.

But I know many of you well enough to be assured that you are not in fact retired from concern and participation over the issues we face together. It is in the tradition of the antiquarians I know, that you continue to participate through your work, and through your understanding, in helping us achieve what you achieved before—a style of medical care, and a style of medical education in harmony with the times, and responsive to public need. We must have your help now, as before, in whatever city, at whatever medical center you may be working or exercising your influence. All must help. It is not the

job of one of us, nor of any small group of us. All people touched by important services and important agencies will participate.

This is the dawning of the Age of Aquarius; harmony and understanding, sympathy and trust abounding.

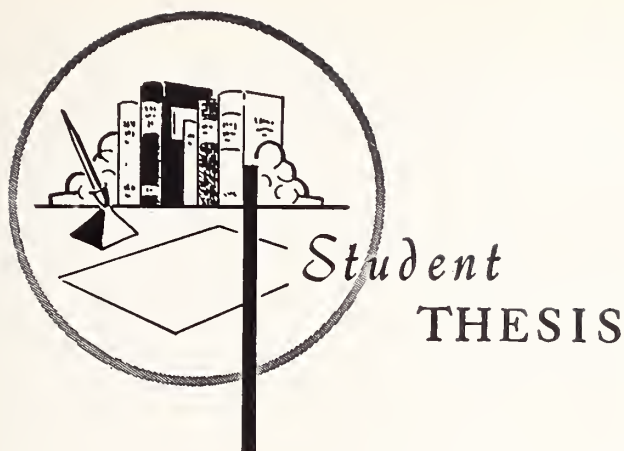
References

1. Atchley, Dana W.: The clinical clerkship in medicine: Keystone of the arch of undergraduate medical education. *JAMA*, 174 (November 12, 1960): 1413-16.
2. Flexner, Abraham: *Medical Education in the United States and Canada*, a report to the Carnegie Foundation for the Advancement of Teaching, Bulletin 4, 1910.
3. From "A New Sense of Professional Challenge and Responsibility" prepared by W. P. Dearing for the conference, Consumers and Providers: Roles and Issues in the Partnerships for Health, Health Services Research Center, University of North Carolina, Chapel Hill, April 12-14, 1970.
4. Ibid.

UNIVERSITY OF KANSAS MEDICAL STUDENT SOCIETY

At a meeting September 27, 1970, the Council of the Kansas Medical Society voted unanimously to include the University of Kansas Medical Student Society as a component part of its structure.

The JOURNAL is pleased to welcome this organization not only because the Kansas Medical Society is the first state medical society to include medical students in this manner but because students at the Medical Center have long been valued contributors to this publication. We look forward to working with them in the interests of medical practice in Kansas.



Modern Management of the Rh Incompatible Pregnancy

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ERYTHROBLASTOSIS FETALIS is a disease of the fetus and newborn infant characterized by hemolytic anemia that results from incompatibility between the blood group of the fetus and that of its mother. Until recently, most cases of erythroblastosis fetalis were attributed to Rh incompatibilities, that is, an Rh-negative mother and an Rh-positive fetus. About 13 per cent of all marriages are potentially capable of producing these incompatibilities, yet only one per one hundred and fifty to two hundred pregnancies results in Rh erythroblastosis. Heterozygosity, limitation of family size, and variable immune competency of the mother may produce this discrepancy. ABO erythroblastosis has recently been shown to occur at least three times as often as the Rh variety, yet serious complications with it are extremely rare, jaundice of some degree usually being the only problem. Clinically, significant erythroblastosis fetalis is almost exclusively a product of Rh incompatibility and despite aggressive pediatric management with exchange transfusion, premature delivery, amniocentesis, and so forth, the perinatal mortality and morbidity is still so high that it is a significant public health problem.

Pathogenesis of Rh Immunization

Rh-negative patients become immunized to the Rh factor by exposure to Rh-positive erythrocytes. Accidental exposure by transfusion or intramuscular in-

jection is now uncommon so that exposure through pregnancy is the major cause of isoimmunization. It has been generally recognized that the presence of fetal erythrocytes in the maternal circulation after the twelfth week of pregnancy is a normal phenomenon. Using the Kleihauer-Betke technique which depends on the differential staining properties of fetal and maternal hemoglobin, the percentage of normal pregnant women with peripheral smears positive for fetal erythrocytes increases from 4 to 10 per cent in the first trimester up to 38 to 75 per cent at term. Labor and delivery, particularly difficult or operative, have been shown to play the major role in fetal-maternal hemorrhage. This linear increase with the progression of pregnancy has been correlated with the growth of the placenta vascular bed, the loss of the Langhans' layer with resultant thinning of the barrier between fetal capillary and maternal intervillous sinuses, and the progressive increase in the pressure gradient greater on the fetal side, all favoring passage of cells to the mother.

Many studies have shown that in pregnancies complicated by toxemia, diabetes, heart disease, chronic hypertension, hydramnios, as well as spontaneous abortion, the fetal-maternal hemorrhage is greatly increased. Zipursky and others have demonstrated that while these larger "bleeds" are more likely to produce immunization, they are relatively uncommon and the majority of sensitizations result from "bleeds" of less than 0.1 milliliter as demonstrated in peripheral smear. As little as 0.3 milliliter of Rh-positive fetal blood is required to effect maternal immunization. During a subsequent Rh incompatible pregnancy, the additional fetal-maternal hemorrhage stimulates anti-Rh antibody production. This anti-

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Foss recently completed his internship at University of Texas Medical Branch Hospitals, Galveston, Texas.

body easily crosses the placenta, producing hemolysis of fetal erythrocytes and the clinical picture of erythroblastosis fetalis.

It has been recognized for some time that immunization is very uncommon during the first pregnancy even though fetal erythrocytes are present in the maternal circulation. The reason for this is not known, although the rising steroid levels of pregnancy may render the mother's immune system unresponsive to the antigen. Almost always if immunization is to occur the rise in maternal antibody is not detectable for two to six months postpartum. Therefore, the major immunizing threat is believed to occur at the end of the third trimester and the immediate postpartum period, with a lag period of several months during which attempts might be made to prevent sensitization.

Experimental Prevention of Rh-Immunization

In 1909, Smith demonstrated that an antigen (diphtheria toxin) administered with diphtheria antitoxin was not antigenic when the antibody was administered in excess. His work has been elaborated and proven by other investigators, including Levine, who in 1943 observed that Rh immunization rarely occurred when the fetal and maternal erythrocytes were ABO-incompatible. He reasoned that the probable mechanism lay in the rapid destruction of the fetal cells by naturally occurring maternal antibody.

From the preceding observations it seemed reasonable to postulate that passive immunization with anti-Rh antibody (which should destroy Rh-positive erythrocytes) might reduce or eliminate their antigenicity. Working independently but concurrently, Freda,

Gorman, and Pollack in the United States and Finn and Clarke in England began in 1961 to work on the prevention of Rh immunization by the passive administration of Rh antibody. They first proceeded to test the hypothesis by administering Rh antibody to Rh-negative male and menopausal female volunteers in whom Rh-positive erythrocytes were introduced by injection. Freda and Gorman used a gamma globulin preparation, whereas Finn and his associates used plasma containing anti-Rh. Their original studies strongly suggested that passive immunization could prevent the formation of Rh antibody. In all further trials a gamma globulin concentrate was used intramuscularly because of the ease of administration and prevention of serum hepatitis transmission. No significant side effects of the concentrate have been reported.

Clinical Trials of Anti-Rh Gamma Globulin

The next logical step was the use of the anti-Rh gamma globulin to prevent Rh immunization in Rh-negative pregnant women. In all studies by Finn and associates, Freda and Gorman, as well as other groups, the amazing effectiveness of the gamma globulin given within 72 hours of delivery in preventing immunization has been repeatedly demonstrated. Protection cannot be considered complete until the women have gone through a second pregnancy free of antibody postpartum. A number of the protected women have had second pregnancies and have not developed Rh immunization. Combined data from various groups, giving the results of anti-Rh antibody testing after six months in controls, and in women injected with anti-Rh gamma globulin are presented in Table 1.

TABLE 1
PREVENTION OF RH IMMUNIZATION

Study	Controls		Injected	
	IMMUNIZED	TOTAL	IMMUNIZED	TOTAL
Liverpool (Finn, Clarke, <i>et al.</i>)	35	320	1	315
New York (Freda, Gorman, <i>et al.</i>)	15	125	1	216
Long Beach (Jennings, <i>et al.</i>), California	27	226	0	236
New York (Queenan, <i>et al.</i>)	6	73	0	100
West Germany (Schneider, <i>et al.</i>)	29	756	2	487
Canada (Chocon, <i>et al.</i>)	20	315	0	354
Canada (Bryant, <i>et al.</i>)	5	45	1	48
Sweden (Bartsch, <i>et al.</i>)	3	45	0	43
Edinburgh (Robertson, <i>et al.</i>)	9	101	0	87
Total	149	2006	4	1886

TABLE 2
PREVENTION OF RH IMMUNIZATION IN SUBSEQUENT PREGNANCIES

Study	Controls		Injected	
	IMMUNIZED	TOTAL	IMMUNIZED	TOTAL
Liverpool (Finn, Clarke, <i>et al.</i>)	5	43	1	40
New York (Freda, Gorman, <i>et al.</i>)	4	16	0	30
Long Beach (Jennings, <i>et al.</i>)	5	25	0	36
New York (Queenan)	1	1	0	2
West Germany (Schneider, <i>et al.</i>)	10	144	0	50
Saint Louis (Hamilton)	16	88	0	80
Edinburgh (Robertson)	0	8	0	7
Total	41	325	1	245

Table 2 gives the results of Rh antibody testing (as per Table 1) of subsequent pregnancies in controls and women treated after the earlier pregnancy with anti-Rh gamma globulin.

Mention should be made of the small number of failures (5) of anti-Rh gamma globulin in preventing immunization. There seems to be evidence that at least two of these women had received antirubella gamma globulin during the pregnancy which may have stimulated anti-gamma globulin antibody production. The two German failures were both multiparous so that primary immunization without demonstrable antibody might have occurred prior to the study. Moreover, there are possibilities common to all failures of immunoprophylaxis such as abnormal antibody response, a particularly strong antigenic stimulus, and possible technical faults in giving the injection.

Present Use of Anti-Rh Gamma Globulin

On June 1, 1968, RhoGAM (Ortho anti-Rh gamma globulin) was approved for use in the United States. The price per dose to hospital laboratories is about \$45 at the time of this writing. RhoGAM should be administered to every Rh-negative mother who delivers an Rh-positive fetus provided she meets the following criteria:

1. The mother must *definitely* be Rh-negative.
2. The mother must not already be immunized to the Rh factor. This is determined by the indirect Coombs' test.
3. The baby must definitely be Rh-positive.
4. The baby should have a negative direct Coombs' test.

Since a miscarriage can serve as a primary im-

munizing stimulus, it is recommended that an Rh-negative mother who has miscarried an Rh-positive fetus should be considered a candidate for RhoGAM. If the blood type of the fetus is not known, it should be assumed to be Rh-negative.

The RhoGAM package contains a serum vial of a dilution of the same lot number of RhoGAM to be used for crossmatch with the prospective patient. The crossmatch should be done prior to administration of the gamma globulin. Should the crossmatch prove incompatible, another lot number of RhoGAM should be used. To be effective RhoGAM must be given within 72 hours after delivery or miscarriage. Anti-Rh gamma globulin is safe. Systemic reactions or sensitizations to repeated injections are rare and mild. The only serious hazard would be the accidental administration of RhoGAM to a Rh-positive individual. Of course, RhoGAM must not be given to the infant.

Conclusion

The proof of the effectiveness of anti-Rh gamma globulin in the prevention of Rh sensitization opens up a new era for the prevention of erythroblastosis fetalis. RhoGAM is safe, and if given within 72 hours postpartum appears to be 100 per cent effective in the prevention of Rh immunization. Widespread application of this knowledge could make a rarity of this disease within a few years. Certainly in another generation a danger that heretofore has threatened the child-bearing potential of almost 200,000 women per year in this country alone should have been removed.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 1300 Topeka Avenue, Topeka, Kansas 66612.

Clinical Cardiology

Etiology and Pathogenesis of Hypertension

HARRIET P. DUSTAN, M.D.,* *Cleveland, Ohio*

HYPERTENSION is a major cardiovascular problem that is largely unsolved. However, there is a variety of drugs available for treatment which used singly or in combination reduce arterial pressure substantially. Such therapeutic effectiveness tends to obscure the fact that we actually know very little about the mechanisms of hypertension and the functional details of its natural history.

Hypertension is a symptom, not a disease. We know it to be associated with a variety of diseases, but these affect only a small number of patients so that in most hypertension is without apparent cause. This condition is called essential hypertension. The term is an archaic misnomer because we now know that hypertension is not essential for anything. Long gone are the days when physicians believed elevated arterial pressure to be essential for maintenance of tissue perfusion.

Although elevated blood pressure, of itself, is a symptom, it is often associated with vascular diseases—arteriolar sclerosis or premature atherosclerosis. Arteriolar disease occurs more commonly in patients with severe diastolic hypertension, while premature atherosclerosis is usually a manifestation of long sustained arterial pressure elevation, even one of mild degree.

Hypertension can be classified in a number of ways according to: (1) the type of arterial pressure elevation—systolic, diastolic, or mixed; (2) the character of the elevation—labile or sustained; (3) severity of the associated vascular disease—mild, moderate, severe, or malignant (accelerated); (4) or etiology—renal, adrenal, cardiovascular, or essential. At our present level of knowledge, the etiologic classification is the most interesting. Not only does recognition of the various causes of elevated arterial pressure lead to more rational treatment, but also it gives an opportunity to study the mechanisms of hypertension.

The hypertensions that are associated with various diseases are called secondary. When none of these conditions is present, the hypertension is said to be

primary. This term, like "essential," is a misnomer because each hypertension has a cause even though our knowledge is not sufficient to recognize it. Clearly, the more we have learned the more we have seen; for example, consider the types of hypertension recognized in the past 20 years. These include primary aldosteronism, renal arterial disease, and increased activity of the beta-adrenergic component of the sympathetic nervous system. Before these types were recognized, such patients were considered to have "essential" or "primary" hypertension.

The physiologic abnormalities that have been found in hypertensives relate to the nervous control of the circulation, catecholamines, cardiac output and peripheral resistance, adrenal steroids, the renal pressor system and plasma volume. Evidence is accumulating that these factors do not operate alone, and it seems likely that they make up an integrated system, one expression of which is elevated blood pressure.

When considering the etiology and pathogenesis of hypertension, it is an interesting exercise to see how these various factors are interrelated in the different types of hypertension. Of course, our present information is incomplete, but enough is available to make the exercise worthwhile.

The most frequently occurring secondary hypertensions now recognized are those associated with renal arterial disease and renal parenchymal disease, pheochromocytoma, primary aldosteronism, coarctation of the aorta and increased activity of the beta-adrenergic nervous system.

In patients with renal arterial disease, the most likely cause of hypertension is, of course, the renin-angiotensin system. However, elevations of renin (which is the component most readily measured) are not routinely found. This suggests that other factors are also operating and since blood pressure can be lowered with drugs that suppress the activity of the sympathetic nervous system, this indicates a nervous component in the hypertension as well. In fact, we have recently shown that these patients often have exaggerated increases in blood pressure in response to head-up tilt. Further, they tend to have slightly increased cardiac output which may represent an increase in nervous stimulation of the heart. Plasma volume can be decreased and, in our

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Prepared for the JOURNAL by the Kansas Heart Association.

experience, it is inversely related to the plasma renin activity. Additionally, aldosterone production is often increased, producing a state of secondary aldosteronism. Thus, although we cannot put together all the pieces of information in an integrated fashion, evidence is accumulating that the hypertension accompanying renal arterial disease is an expression of a variety of abnormalities, only one of which is a disturbance of the renin-angiotensin system.

In renal parenchymal disease, there is not so much information available concerning the possible pressor factors. However, there have been studies in patients with chronic renal failure which show expansion of the extracellular fluid volumes and correction of hypertension when these excesses are corrected by dialysis. Further, there is a suggestion that with expanded plasma volume the nervous control of the circulation is lessened—possibly because it isn't so necessary when the blood volume is high. Plasma renin activity has not been consistently found to be elevated although increased activity of the renin-angiotensin system seems likely in patients whose hypertension remits following bilateral nephrectomy done in preparation for transplantation. Thus, in this type of hypertension, there are indications that, in one way or another, three pressor factors participate—renal pressor, neurogenic, and fluid volume.

Pheochromocytoma seems a much more straightforward problem than that presented by the other two types of hypertension. Currently, we know that there is increased epinephrine and norepinephrine production, and this seems reason enough for the hypertension. Plasma volume can also be reduced, and this is important because it may explain the hypotensive crises that often occur in these patients following surgical removal of the tumor.

In primary aldosteronism, there is an increased production of aldosterone which can cause increases in body sodium, extracellular fluid volume and plasma volume. Along with these increases, decreased activity of the sympathetic nervous system has been reported. Plasma renin activity is low suggesting that this is not a factor in the hypertension.

Increased activity of the beta-adrenergic component of the sympathetic nervous system can be associated with hypertension. These patients have palpitations and exaggerated tachycardia in response to a variety of normal stimuli, such as exercise. They have increased cardiac output but a normal or near normal peripheral resistance. Their hypertension can be controlled with beta-blocking drugs such as propranolol.

Coarctation of the aorta is also recognized as an occasional cause of hypertension. If patients are not in cardiac failure, apparently hemodynamic functions are normal, at least in the upper parts of the body above the coarctation. However, until flow beyond the coarctation can be measured reliably, hemodynamic

characteristics of this type of hypertension cannot be determined. Other pressor mechanisms have not been studied in such patients.

Although most treatments of hypertension are empiric rather than based on specific pressor mechanisms, information is becoming increasingly available in various types of hypertension which bids well to describe a number of integrated circulatory disturbances, of which hypertension is one manifestation. These descriptions will provide rational, rather than empiric, treatment.

WICHITA PSYCHOLOGIST CHAIRMAN OF EUROPEAN MEETING

John S. Pearson, Ph.D., clinical psychologist at the Wichita Clinic, attended a meeting of the World Federation of Neurology Research Commission on Huntington's Chorea and presided over the section devoted to treatment and pedigree registration. Huntington's Chorea is a rare, hereditary neurologic disease which recently claimed the life of famed folk singer, Woodie Guthrie. Dr. Pearson has conducted extensive studies on the incidence of the disease in the Midwest and is author of a booklet, *Huntington's Chorea and Your Family*, which has been distributed to afflicted families throughout the world.

Twenty authorities representing 15 different countries exchanged information and planned new approaches to the puzzling disease for which there is as yet no cure.

In addition to the World Federation of Neurology, sponsors included the West German Government and the Committee to Combat Huntington's Disease, Inc., of New York City.

The meeting was held at the Nymphenberg Castle in Munich, Germany, August 30, through September 3. Other participants included Dr. McDonald Critchley, London, England, president of the World Federation of Neurology; Dr. Andre Barbeau, Montreal, Canada, secretary-general of the Research Commission on Huntington's Chorea; and Dr. Heinrik Oepen, Marburg an der Lahn, Germany, local chairman.

Correction

An error was made in the article "Use of Anti-Arrhythmic Agents Other Than Digitalis" (Clinical Cardiology, July 1970 issue). The fifth line of the third full paragraph in the right-hand column on page 276 should have read, "sodium bicarbonate or 1 to 3 *micrograms*. . ."

The President's Message

Citizenship

Good citizenship implies a multifaceted state of activity. Part of being a good physician is being a good citizen. We must demonstrate citizen awareness in many positive ways, some of which include legislative, social, ethnic and economic.

Citizen leadership involves having the courage to take a stand on all issues that are pertinent to the welfare of our country as a whole. It also includes working to make our voices heard on all issues for which we have an opinion.

Soon we have the privilege, as well as a great responsibility, to exercise our vote. There are many issues locally and nationally before us and before those we elect to be our spokesmen. These will have a far-reaching effect on our individual as well as our professional lives. The prime deficiency of our democracy is the lethargy of "letting Joe do it." Too often we default by not exercising our privilege to vote, relying on others to cast a ballot as we hope they will. When they don't vote our conviction, then we must live with decisions of others who may not be expressing our opinion.

The coming election is particularly important in some of the issues which are on the ballot to change the organization of the executive branch of Kansas government. Those who draft our laws frequently put an excess of fine print in the write-up, which may have a more far-reaching effect than the title sentence in the proposal. Please read the proposition thoroughly about changing the term for governor. The four-year term may or may not be all right. The other changes, if passed, result in permissive legislation to abolish all boards of licensure and other departments of the state. This would put dictatorial power in the hands of any governor and establish a precedent which I feel is not democratic or in the best interests of the people of Kansas.

It is important that we become fully acquainted with the issues, with the candidates, and with their individual opinions about the issues. Then it is mandatory that we vote our convictions at the proper time. In this way we can truly have a part in exercising our prerogative of being good citizens, thus helping to make democracy work for the benefit of all.



A handwritten signature in cursive script that reads "Francis J. Collins" followed by a stylized flourish.

President



Editorial COMMENT



The Goal

In C. Arden Miller's provocative paper appearing in this issue, three attitudes are presented which will come to bear on the approaching maneuvers relating to the provision of medical care in this country. First, there is the bitter diatribe of the disenchanted young man who, whatever the merit of his charges, chooses not to work within the system. Second, there is the mature academician within the system (though perhaps in the First Circle) whose words reflect some of the antagonism existing between the academic and clinical groups. The third voice, the informed laity, issues not a challenge but an ultimatum that the form and manner of health service will be determined not by the physician but by the patient.

Medical care was being delivered by the physician to the underprivileged patient long before the sociologists discovered him. One reflection of this is the obvious boomerang of the cost of the government-subsidized programs. A major contribution to the high cost of physicians' services is not excessive (or fraudulent) payment to the individual physician but the fact that prior to these programs, he gave much of that service with little or no charge. Medicine's detractors choose not to look at the contribution before, only the high cost after the fact. The medical profession is an obvious and handy whipping boy.

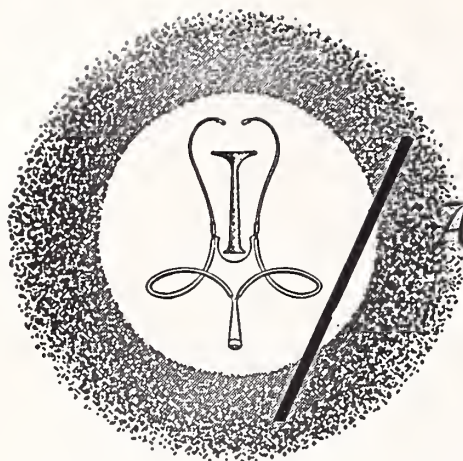
Deficiencies of food, clothing and housing are elements of poverty as much as the lack of consistent, accessible medical care. The physician feels abused when he seems to be singled out for condemnation. He occupies a different position, however, from the purveyors of these other elements. Ultimately, his service must bring the provider and the recipient

together on a personal basis. Consequently, there is more emotionalism on both sides.

A significant proportion of our people have not received adequate medical care. It matters not that this situation is due in part to the physical impossibility for the present supply of physicians to reach every individual, or to the lack of initiative of many people to seek out what is available to them, or that the cost (inflated by the general economic trend and conditions beyond the physician's control) has placed it beyond their reach. The physician is the central figure and the recipient of the major part of the blame. Medicine's effort to retain a voice in the development and administration of a health care program will have to combat the stereotyped image nurtured by its opponents.

As politics is the art of the possible (i.e. compromise), any organized group seeking political expression must accomplish some internal compromises in order to have unified strength. It is essential, therefore, that the profession reconcile the diverging attitudes of its members so that a stable, cohesive, informed, responsible strategy can be devised. Fragmentation in this case would be disastrous for the physician and for the patient as well.

The goal is a workable, effective health care program. The physician's interest derives not, as many would have it, from a desire to guarantee extravagant remuneration for himself or to subvert the patient to some selfish end. Physicians know that the therapeutic plan which provides the optimum result for the patient likewise provides the optimum result for the physician. It is not illogical to think this applies on a collective basis as much as on a personal one.—D.E.G.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the Doctor's Calendar. Notice of the session is posted in advance to allow the physician time to make preparations.

OCTOBER

- Oct. 22-24 **Annual Fall Clinical Conference, Kansas City Southwest Clinical Society, Hotel Muehlebach, Kansas City, Missouri. Contact: Miss Alta L. Bingham, Executive Secretary, 3036 Gillham Rd., Kansas City, Missouri 64108.**
- Oct. 26-28 40th Annual Fall Conference, Oklahoma City Clinical Society, Hotel Oklahoma. For information write: Mrs. Alma O'Donnell, Exec. Sec., Oklahoma City Clinical Society, 601 Northwest Expressway, Oklahoma City 73118.
- Oct. 30-31 2nd Annual Birth Defects Symposium, *Disorders of Glucose Metabolism in Children*, University of Florida College of Medicine, Gainesville. Write: Mrs. Betty J. Howard, Div. of Postgraduate Education, J. Hillis Miller Health Center, Gainesville, Florida 32601.
- Nov. 2-4 Omaha Mid-West Clinical Society, annual meeting, Fontenelle Hotel, Omaha. Write John F. McLeay, M.D., Director of Clinics, 1040 Medical Arts Building, Omaha 68102.
- Nov. 11-12 *Sex and Gender Deviations in Children*, a conference on the diagnosis and treatment of special sexual problems in children. University of Missouri-Columbia Medical Center, Columbia, Missouri.
- Nov. 29 National Conference on the Medical Aspects of Sports (AMA), Sheraton-Boston Hotel, Boston, Massachusetts. For information write the Committee on the Medical Aspects of Sports, AMA, 535 N. Dearborn, Chicago 60610.

Nov. 29-
Dec. 2

American Medical Association, annual clinical convention, Boston. Write: Ernest B. Howard, M.D., Exec. Vice President, AMA, 535 N. Dearborn, Chicago, 60610.

DECEMBER

- Dec. 5-10 American Academy of Dermatology, annual meeting, Palmer House, Chicago. Information: Frederick A. J. Kingery, M.D., Secretary-Treasurer, American Academy of Dermatology, 2250 N.W. Flanders, Portland, Oregon 97210.
- Dec. 10-11 Kansas City Society of Ophthalmology and Otolaryngology, Plaza Inn, Kansas City, Missouri. Write: R. Dean Williams, M.D., Secretary, 305 W. 43rd Street, Kansas City, Missouri 64111.

POSTGRADUATE EDUCATION

University of Kansas:

- Oct. 20-21 ***Medicine and Religion: Youth Problems***
- Nov. 9-12 ***Internal Medicine***
- Nov. 18-20 ***Medical Technology***

For further information write the Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas 66103.

University of Colorado:

- Oct. 26-29 *The Medical Audit and Continuing Education*
- Nov. 2-13 *Clinical Management and Control of Tuberculosis* (National Jewish Hospital)
(Continued on page 400)

The Month in Washington

(Editor's Note: The following items of interest were taken from a monthly report prepared by the Washington office of the AMA.)

Legislation Removes Tax Discrimination Against Self-Employed

The Nixon Administration is drafting legislation that would eliminate the reason for physicians forming professional corporations for federal income tax advantages.

The legislation would remove the tax discrimination against self-employed physicians and other professionals in the tax treatment of retirement savings.

K. Martin Worthy, chief counsel of the Internal Revenue Service, said the legislation probably will be submitted to Congress next year as an Administration measure. He said the Administration intends to "remove the present discrimination between tax treatment of qualified plans for employees and qualified plans adopted by self-employed persons."

The IRS official said that it was unfortunate that disparate tax treatment of corporate employees and professionals has led to the adoption of state laws permitting the formation of professional corporations.

"The potential, if not actual, erosion of the traditional stringent professional standards and liabilities on the part of those who form such organizations is, in my opinion, a highly undesirable by-product of this problem and its resolution to date," he told a meeting of lawyers. "The intervention of a legal entity between the doctor, lawyer, or accountant and his client would not appear to serve any social or public purpose."

Worthy warned that recognition of a professional organization is recognized as a corporation for tax purposes did not necessarily mean that the organization and its employees would have a clear track as far as securing the tax benefits which are desired.

Worthy said an important consideration to be weighed by the professional person is that the new tax act provides for a 50 per cent maximum tax rate, after a transition period, upon "earned income," which includes earnings from personal services.

"In view of this new tax ceiling, it is questionable whether a professional person would find it as important as it was previously to achieve the tax deferral available as an employee covered by a qualified pension or profit sharing plan," he said.

Physicians' Assistants

The Board on Medicine of the National Academy of Sciences urged wide use of three types of physicians' assistants as the quickest way to relieve the national shortage of doctors.

In a special report, the board called for the cooperation of the American Medical Association, the Association of American Medical Colleges and the government in developing physicians' assistants programs.

The AMA has been advocating use of physicians' assistants for some time.

The NAS Board said that physicians' assistants could "extend the arms, legs and brains of the physician" by performing tasks that do not require the unique talents of the physician.

The three types of assistants recommended by the board were:

1. Physician's associate—the most highly trained type; would be qualified to do work that involves some independent medical judgment; under the physician's supervision, he could in some cases make a diagnosis and perform therapy, with the range of his responsibilities increasing as he develops new skills on the job.

2. Specialized assistant—would be highly skilled in one type of clinical specialty or procedure within a specialty (such as the operation of a renal dialysis unit); would receive most of his training from a physician specialist.

3. Non-specialized assistant—would be to medicine what the practical nurse is to nursing; could receive much of his training on the job.

As the AMA has been doing, the board cautioned against the premature enactment of licensing laws that would establish rigid job qualifications before the full potential usefulness of the assistants had been determined. The board report recommended a system of registration that would permit physicians to employ assistants who had completed an approved program or otherwise established their qualifications.

Possession of a high school diploma should be an adequate prerequisite for training to become physicians' assistants, according to the NAS Board. It suggested varying amounts of education, clinical experience, and on-the-job training for the three types of assistants. For physicians' associates, it recommend-

ed the equivalent of two years of professional-level classroom and clinical work. Instruction should cover the basic sciences underlying medical practice, and clinical training should be "of essentially the same type and degree as that given medical students." Medical corpsmen, about 30,000 of whom are discharged from the military services each year, and other medical workers who enter the training program should be allowed credit for the clinical knowledge they already have acquired.

AMA Opposes Establishment of National Formulary

The American Medical Association opposed establishment of a national formulary that could restrict the prescribing practices of physicians with respect to federally supported medical programs.

In a letter of Sen. Russell B. Long (D., La.), chairman of the Senate Finance Committee, which was considering such legislation, D. Ernest B. Howard, executive vice president of the AMA, said:

"The American Medical Association, representing approximately 180,000 active private practitioners of medicine in America, is opposed to a proposal that would interfere with the professional judgment and responsibilities of physicians. The proposed amendment, which would give a Federal Formulary Committee the authority to *exclude* from the Formulary (and therefore from payment) any drug which it considers unnecessary is, in our opinion, just such an infringement upon the professional judgment of practicing physicians.

"The amendment would provide the Formulary Committee with authority to publish prescribing information about each drug listed. Adequate prescribing information to assist physicians in selecting the most rational course of therapy is available through a variety of acceptable sources. The proposed additional information is not only unnecessary but undesirable since physicians would be unable to deviate from that standard regardless of a particular patient's circumstances without facing the risk of malpractice liability.

"Further, the amendment would require that a physician who desires to prescribe the product of a particular manufacturer with which he had experience and confidence could do so only by writing in his own handwriting the established name of the drug again and the name of the preferred manufacturer. We disagree with this practice limiting the authority of the physician to prescribe the drug of his choice. Our governing body, the AMA House of Delegates, has stated and reaffirmed on many occasions that physicians should be free to use either the generic (established) or brand name in writing prescriptions.

"In addition, the proposed amendment would have the Formulary Committee institute inspections, sample examinations and scientific review of drug products to be listed by the name of the supplier or the brand name. This task of the committee seems to be beyond its capability, particularly since it is constituted only on a part-time basis. . . .

"We have said many times that we want our patients to receive high-quality drugs at the lowest possible cost. We continue in this position, more strongly than ever. But, we firmly believe that the creation of a national formulary would not bring about a more economical provision of drugs under programs established within the Department of Health, Education, and Welfare, nor would it enhance the quality of these drugs."

Announcements

(Continued from page 398)

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|--|--|
| Nov. 4-6 | <i>Management and Care of Respiratory Insufficiency</i> (limited) |
| Nov. 19-21 | <i>The Battered Child Symposium</i> |
| For further information write the Office of Postgraduate Medical Education, University of Colorado School of Medicine, 4200 E. Ninth Ave., Denver 80220. | |
| Nov. 2-5 | 55th Annual Scientific Assembly, Interstate Postgraduate Medical Association, Palmer House, Chicago. For information write the Interstate Postgraduate Medical Association, 307 N. Charter St., Madison, Wisconsin 53715. |
| Nov. 9-20 | <i>Laryngology and Bronchoesophagology</i> , University of Illinois at the Medical Center, Chicago. For information write the Department of Otolaryngology, Abraham Lincoln School of Medicine, University of Illinois at the Medical Center, Box 6998, Chicago, Illinois 60680. |
| Nov. 13-14 | <i>Otolaryngology for the Family Practitioner</i> , University of Miami School of Medicine, Department of Otolaryngology. For information write the Neuro-Otologic Laboratory, University of Miami, School of Medicine, Box 875, Biscayne Annex, Miami, Florida 33152. |
| Nov. 19-20 | <i>Seminar in Obstetrics and Gynecology</i> , University of Florida College of Medicine, Gainesville. For information write the Division of Postgraduate Education, J. Hillis Miller Health Center, Box 758, College of Medicine, Gainesville, Florida 32601. |

VOX DOX

To the Editor:

Although I am aware of your resolution not to publish letters simply because they are commendatory, I cannot refrain from writing to congratulate you on the docility of the Society you serve. In spite of your offer of this space to the members for release of their tensions, the dust collecting in the mail box suggests one or more of the following:

1. They are completely satisfied with the Society and your publication.
2. They have no opinions.
3. They can't read.
4. They can't write.

Keep up the good work. Enough of this mouth-to-mouth resuscitation.

THE EDITOR

Education-Information Program

Report—August 15-September 15

HANK PARKINSON, Coordinator

COMMUNITY HEALTH WEEK activities were in center spotlight during this 30-day period. Officials of 70 county medical societies, mayors of our five largest cities and the Governor were contacted to help participate in this promotion. In addition, eight other state associations involved in the health field generally were forwarded information and urged to help make Community Health Week a significant project.

We envision three releases going to the media prior to the promotion (early October) and two more being distributed during the actual week October 18-October 24. In addition, the AMA has provided TV slides which will be distributed to the various television stations and through the cooperation of the Kansas Association of Radio Broadcasters, public service spots alerting listeners to Community Health Week will be programmed.

In all, this project is shaping up to be an outstanding activity in the education-information area.

During the 30-day period, the following releases were prepared and distributed to the Kansas media:

1. A story noting the alarming increase in syphilis

and gonorrhea and what was being done to combat this threat.

2. A 1000-word feature story concerning the Society's activities in the emergency care and patient delivery fields.

3. A story centering around the medical assistant circuit courses and detailing the various speakers.

The venereal disease story received excellent usage, it was moved by both the AP and UPI. In addition, many members of the media gave special treatment to the story. For instance, KTVH (the CBS-TV affiliate in Wichita, which feeds three Western Kansas stations) is developing a special 90-minute public service feature around this topic and crediting the Kansas Medical Society extensively. KFH (a CBS-radio affiliate in Wichita) is doing a series on the subject. We have had indications that other stations throughout the state also gave special treatment to this story.

Also during the 30-day increment, an additional 50 fillers were mailed to the state's 272 weeklies and 54 dailies. We propose to send these features to the state print media at least twice a year.

KANSAS STATE DEPARTMENT OF HEALTH
TOPEKA, KANSAS

Epidemiology & Disease Control Services—Registration & Health Statistics Services—
Kansas Morbidity Incidence
Summary of Cases Reported in August, 1970 and 1969

Diseases	August			January-August Inclusive		
	1970	1969	5-Year Median 1966-1970	1970	1969	5-Year Median 1966-1970
Amebiasis	5	—	2	17	1	11
Aseptic meningitis	10	1	1	18	8	5
Brucellosis	—	—	—	1	1	1
Diphtheria	—	—	—	—	—	—
Encephalitis, prim., infect.	—	2	2	10	7	10
Encephalitis, post-infect.	—	—	—	—	1	1
Gonorrhea	655	431	431	4,452	3,305	2,856
Hepatitis, infectious	29	16	25	322	195	195
Measles (Rubeola)	1	—	*	69	7	*
Meningococcal meningitis	—	—	—	5	14	13
Mumps	—	—	*	139	93	*
Pertussis	2	—	1	2	—	4
Poliomylitis	—	—	—	—	—	—
Rheumatic fever	—	—	—	4	6	3
Rubella (German Measles)	—	—	*	51	38	*
Salmonellosis	34	14	34	151	106	151
Scarlet fever	1	—	1	71	23	52
Shigellosis	8	5	8	55	49	49
Streptococcal infections	102	134	134	3,029	1,723	1,723
Syphilis	112	112	112	901	1,528	817
Tinea capitis	1	1	3	21	31	31
Tuberculosis	16	19	19	141	144	154
Tularemia	—	—	—	1	3	3
Typhoid fever	—	—	—	—	—	1

* Statistics not available for 5-year median.

AUSTRALIA ANTIGEN

Many articles have appeared in the recent medical literature on the "Australia antigen," and a brief review of present knowledge about this puzzling particle is reprinted from the Rhode Island Communicable Disease Report:

HISTORY

As you know, the Australia antigen, called Au (1) by some, was originally discovered in the serum of Australian aborigines, and was subsequently found in the blood of patients with viral hepatitis. The antigen occurs in only 1 of 1,000 normal Americans, yet over 60 per cent of hepatitis patients with parenteral exposure, and about 30 per cent of patients without a history of transfusions or injections, have Au (1) in their blood.

CHARACTERISTICS

Australian antigen may be found in the blood of hepatitis patients for days to weeks before symptoms develop, and may persist as long after illness. Particles

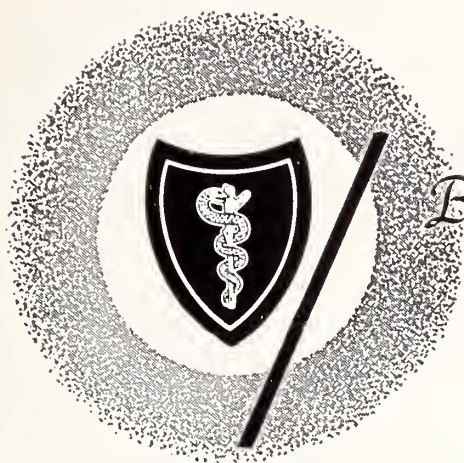
have been seen with the electron microscope in blood from these patients, and these are felt to represent the antigen's location. For this reason, and because there is a greater probability of developing hepatitis if transfused with blood containing Au (1), the antigen is felt to be, or to be closely associated with, the *elusive hepatitis virus*. Two facts are against the particle itself being a virus: it contains no nucleic acid (the "core" of all known viruses), and it has not been grown in tissue culture.

CLINICAL

Patients with Au (1) in their blood fall into four groups:

- 1. Those with "classic" acute viral hepatitis.
- 2. Those with persistent or chronic active hepatitis, in whom Au (1) may be found for four or more months.
- 3. Patients with disorders of immune competence, such as Down's syndrome, lymphocytic leukemia, Hodgkin's disease, lepromatous leprosy, and chronic renal disease undergoing hemodialysis.

(Continued on page 404)



Blue Shield

A Look to the Future: Comprehensive Health Care Benefits

If challenges sold for a nickle a gross, Kansas Blue Cross and Blue Shield could market theirs and give away coverage while adding to the reserve.

Unfortunately, the bottom's fallen out of the market, and new challenges can be met only by actions that overcome. And we shall overcome.

What are the challenges in today's prepayment field?

For openers let's try these.

- I. The proposed 1971 Blue Cross and Blue Shield Basic Contract per family per month will cost over the \$40 level.
- II. A rash of National Health Insurance Bills have been introduced in Congress.
- III. Recent labor negotiations have resulted in "health care packages" as fringe benefits. There are no indications this trend will be reversed.
- IV. Certain National Accounts or local groups have not been obtained or retained by Kansas Blue Shield through inability to administer or provide benefits requested in the group specs.

The challenges then are not answered by reminiscing about the good old days or even looking at today because by tomorrow, today's today is one of the good old yesterdays.

The Blue Cross and Blue Shield Boards had this in mind when they recently approved a new Statement of Purpose as follows:

"The purpose of Blue Cross-Blue Shield is to cooperate with providers in the development of comprehensive

benefit programs for effective delivery of high quality health care services to subscribers at the most economical cost. While Blue Cross-Blue Shield's primary intention is to strengthen voluntary prepayment in the health care field it stands ready to cooperate with providers of services and government in the administration of tax supported programs."

To maintain the best interests of medicine and the subscriber as well as remain a leader in the prepayment market place, it is essential that the concept of comprehensive benefits be explored.

Currently, a comprehensive benefit package has been developed which will meet the challenges.

The comprehensive package would provide a basic contract to be made available to all groups.

Optional benefits would be available to those groups who wanted to add additional benefits that are not traditionally covered by Blue Shield now.

Rate-saving coinsurance options such as 80/20 or 50/50 on the basic contract would be available. This new comprehensive package would be comparable in cost to the present basic coverage.

The coinsurance features would leave the patient with financial responsibility for each medical service he received up to a maximum contract year obligation of \$400 per family or \$200 per individual.

The maximum coverage under the basic comprehensive benefits contract would be \$50,000 with renewal available on proof of insurability.

Comprehensive Benefits: Basic Contract

A. Hospital Services

1. Inpatient
2. Outpatient

Prepared by members of the Kansas Blue Shield Staff.

- B. Qualified ECF Service (approved by Utilization Review Committees)
- C. Physician's Services (including home and office care)
 - 1. Some outpatient psychiatric limitations
- D. Home Health Agency Services
- E. Durable Medical Equipment

After the group has selected the basic contract, optional benefits that Blue Shield traditionally has not covered would be available.

Comprehensive Benefits: Options

- A. Outpatient legend drugs with 80/20 coinsurance at roughly \$5.26 per month per family.
- B. Eye care (refractions, including those provided by optometrists) on an 80/20 coinsurance could be added as a rider for about \$1.56 per month per family.
- C. Dental benefits on an 80/20 coinsurance basis could be added as a rider for about \$11.54 per month per family.

It is felt that many of the answers to today's prepayment challenges could be met by comprehensive benefits. In the next few months Blue Shield will be discussing this concept with the profession. We want your advice and guidance as we look to the future.

Morbidity Incidence Report

(Continued from page 402)

- 4. Apparently normal people, with very high incidence in tropical areas (10 to 100 times U. S. rate).

RELEVANCE

At present, blood donor testing for Au (1) can detect some 20 per cent of hepatitis carriers; using more sensitive technics under development, perhaps many cases of post-transfusion hepatitis could be averted. In addition, many of the 1/1000 Americans who carry the antigen may be asymptomatic hepatitis carriers, and potential food handlers might be tested for Au (1). Since the antigen can pass through imperfections in dialysis membranes, the working parts of these machines could be made disposable to avoid transmission to other dialysis patients.

Interestingly, some of our concepts about hepatitis may have to be revised. Au (1) has been transmitted *both* parenterally *and* orally; and as mentioned, many hepatitis patients with the antigen in their blood have had *no* parenteral exposure. Perhaps the division between "serum" and "infectious" hepatitis is not so clear as was once thought.

Along the Bookshelf—

Clendening Medical Library

RECENT ACQUISITIONS

- American Medical Association. Committee on Transfusion and Transplantation. General principles of blood transfusion. Chicago, 1970.
- Brazelton, T. Berry. Infants and mothers; differences in development. New York, Delacorte Press, 1969.
- Brown, William E. Cosmetic surgery. New York, Stein and Day, 1970.
- Caldwell, William L. Cancer of the urinary bladder, with emphasis on treatment by irradiation. St. Louis, Warren H. Green, 1970.
- Cooper, Kenneth H. The new aerobics. Lippincott, Philadelphia, 1970.
- Crawshaw, Ralph. The general practice of community psychiatry. Beaverton, Oregon, Benjamin Rush Foundation, 1969.
- Dressler, William. Clinical aids in cardiac diagnosis. New York, Grune & Stratton, 1970.
- Freidson, Eliot. Profession of medicine; a study of the sociology of applied knowledge. New York, Dodd, Mead, 1970.
- Glaser, William A. Paying the doctor; systems of remuneration and their effects. Baltimore, Johns Hopkins Press, 1970.
- Helt, Eric H. Coronary care units in small hospitals —The Standish (Michigan) experience. Battle Creek, Michigan, W. K. Kellogg Foundation, 1970.
- International Symposium on Amphetamines and Related Compounds, Milan, 1969. International symposium on amphetamines and related compounds. New York, Raven Press, 1970.
- Kampmeier, Rudolph Herman. Physical examination in health and disease. Philadelphia, Davis, 1970.
- Lucia, Salvatore Publo. Wine and the digestive system; the effects of wine and its constituents on the organs and functions of the gastrointestinal tract. San Francisco, Fortune House, 1970.
- National Communicable Disease Center. Isolation techniques for use in hospitals. Superintendent of Documents, United States Government Printing Office, Washington, D. C., 1970.
- Salter, Robert Bruce. Textbook of disorders and injuries of the musculo-skeletal system; an introduction to orthopaedics, rheumatology, metabolic bone disease, rehabilitation, and fractures. Baltimore, Williams & Wilkins, 1970.
- The unit management concept in hospital patient care. St. Louis, Catholic Hospital Association, 1969.
- Yost, Edward. The U. S. health industry; the costs of acceptable medical care by 1975. New York, Praeger, 1969.



FERDINAND C. HELWIG, M.D.

Dr. Ferdinand C. Helwig died at his home in Kansas City, Kansas, on March 23, 1970. He was 71 years of age.

Dr. Helwig was born in Nowata, Oklahoma, on December 12, 1898. He was graduated from the University of Kansas School of Medicine in 1922. After a year's post-graduate study at the University of Berlin, he returned to the University of Kansas medical school to study and teach pathology. Dr. Helwig had served as a pathology consultant to St. Luke's Hospital, Kansas City, Missouri, since 1968, after directing the hospital's department of pathology since 1928.

Dr. Helwig is survived by his wife.

Memorial contributions may be made to the St. Luke's Hospital building fund.

JAMES E. HENSHALL, M.D.

Dr. James E. Henshall, 82, Osborne, died at the Osborne County Memorial Hospital on August 13, 1970.

He was born at Portis, Kansas, on April 4, 1888. He received his medical degree from the University of Kansas School of Medicine in 1914. After completing his internship, he joined his father in the practice of medicine at Osborne. He retired from practice in 1964.

Dr. Henshall is survived by four children.

FORREST L. LOVELAND, M.D.

Dr. Forrest L. Loveland, 84, died August 17, 1970, in a Topeka hospital.

Dr. Loveland was born November 18, 1885 at Garwin, Iowa, and had lived in Topeka since 1912. He received his medical degree from Creighton University at Omaha in 1911. Dr. Loveland practiced primarily in the field of industrial medicine and for many years served as consultant for Southwestern Bell Company in Northeast Kansas. He had also served as medical consultant to the Kansas State Board of Social Welfare and was plant physician for Goodyear Tire and Rubber Company in Topeka.

Dr. Loveland was president of the Kansas Medical Society in 1940-41, and served as delegate to the American Medical Association for about 15 years.

LAUREN R. MORIARTY, M.D.

Dr. Lauren R. Moriarty, 61, died at his home in Bonner Springs on August 17, 1970.

Born in Redfield, South Dakota, on April 13, 1909, Dr. Moriarty was a resident of Bonner Springs 19 years. He was graduated from Creighton University medical school, Omaha, in 1938. He was an associate professor of clinical pathology at the University of Kansas Medical Center from 1956 until his retirement in 1969.

Dr. Moriarty is survived by his wife and four children. The family suggest contributions to the Creighton University Development Fund.

PHILLIP M. PLATTEN, M.D.

Dr. Phillip Platten, 42, died at his home near Salina on August 15, 1970.

Dr. Platten was born July 12, 1928, in Cleveland, Ohio. He was graduated from Ohio State University School of Medicine in 1954, and had lived in Salina since 1964. He was radiologist for Memorial Hospital in Abilene.

Surviving Dr. Platten are his wife and four children.

Memorial contributions may be made to the Ohio State Medical Students' Loan Fund, care of Saline County Medical Society.

NEW FILM FROM KANSAS CHAPTER, AMERICAN CANCER SOCIETY

The new professional educational film, "Cancer of the Urinary System," is now available. This film may be booked through the Kansas Division office of the American Cancer Society.

This film was produced by the National Society with funds provided by the Kansas Division. Willet F. Whitmore, Jr., M.D., Chief, Urologic Service, Memorial Hospital for Cancer and Allied Diseases, New York City, was the medical consultant.

This motion picture reviews the signs and symptoms of urothelial and renal cell cancers. Diagnostic procedures including radiologic and cytologic techniques and cystoscopy are shown. Principles of therapy, choice of modality, and end results are discussed.

Specifications: Date: 1970
Color and Sound: 16 mm.
Reels: 1
Length: 735 feet
Running time: 20½ minutes

Order from Professional Education Department, Kansas Division, Inc., 824 Tyler, Topeka, Kansas 66612.

Home Health Agencies

Home Health Agencies provide care ordered by a private physician for his patient who can be at home but needs skilled professional service on a visit or intermittent basis. In accord with the physician's plan for care, a registered nurse or a physical, speech or occupational therapist may visit the patient.

A variety of conditions may be cared for:

- A baby at home with cystic fibrosis;
- a boy hospitalized briefly because of a fractured hip, and now able to be at home;
- a young mother at home with emphysema;
- a middle-aged man recovering from a coronary and ready for discharge from the hospital;
- an elderly woman at home suffering from congestive heart disease.

When the home situation is satisfactory, home care may be the treatment of choice. Some patients need only a single professional service and some need three or four plus a home health aide and equipment or supplies. Whatever combination of services is called for, the prime objective is that the needs of the patient be met. The private doctor continues to direct the provision of service.

Home Health Service is provided by a community agency having this as a defined purpose. The agency is a health department, hospital or nonprofit voluntary group and the service may be available to one county or a group of counties.

The relationship between physician and home health agency is similar to that between physician and hospital. The agency chooses and supervises its personnel and insures that safe care will be given and adequate records kept. Care is given according to the physician's written plan and reviewed periodically as a basis for continuation, revision or dismissal.

The knowledge and skills of the various health workers assist the physician in planning and carrying out the program that best meets the needs of each individual patient.

Agencies providing Home Health Service charge a fee for such service based on the cost. Methods of payment available are by the individual patient or through insurance plans such as Medicaid, Medicare, and Blue Cross-Blue Shield. When patients are unable to pay and do not have insurance, some plan for subsidization such as community chest or tax funds should cover the cost of the service needed.

During 1970 three new home health agencies have been initiated in Kansas to serve Reno, Logan and Barton counties. Several others should soon be ready. These are in addition to the 33 agencies that have been in operation for some time and are certified for Medicare payments. The 33 agencies are as follows:

- Anderson County Hospital
- Barton County Health Department
- Butler-Greenwood County Health Department
- Clay County Hospital
- Cloud County Health Department
- Coffey County Health Department
- Douglas County Visiting Nurses Association
- Ellis County-St. Anthony Hospital
- Ellsworth County Health Department
- Ford County Health Department
- Franklin County Health Department
- Graham County Hospital
- Harper County Health Department
- Harvey County Health Department
- Jackson County Health Department
- Jefferson County Health Department
- Kingman County Health Department
- Labette County Health Department
- Logan County Hospital
- Lyon County Home Health Service
- McPherson County Health Department
- Morris County Health Department
- Osage County Health Department
- Pratt County Health Department
- Reno County-St. Elizabeth Hospital
- Republic County Health Department
- Rice County Health Department
- Riley County Health Department
- Russell County Health Department
- Salina-Saline County Health Department
- Sedgwick County Health Department
- Shawnee County Health Department
- Sheridan County Hospital
- Thomas County-St. Thomas Hospital
- Washington County Health Department
- Kansas City-Kansas Visiting Nurses Association (Johnson County)

For further information about services in your community contact either your local Home Health Agency or your State Department of Health.

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112th ANNUAL MEETING

KANSAS MEDICAL SOCIETY

The 112th Annual Meeting of the Kansas Medical Society will be held at the downtown Ramada Inn in Topeka on May 9-12, 1971.

Dr. Donald Pierce, General Chairman, Dr. John Travis, Program Chairman, and the members of the State Meeting Committee have been working diligently to arrange an interesting scientific information program on the subject, "The Economic Environment of Medical Care—Change and Challenge." Watch for advance announcements in the Journal, giving you the names of the speakers and their subjects.

The annual sports day will be Monday, and exciting social events are planned for KMS members, their wives and guests on Monday and Tuesday evenings.

MARK THE DATES ON YOUR CALENDAR

May 9-12, 1971—Ramada Inn—Topeka

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References:

(1) Siver, R. H.: CMD, 21:109, September 1954. (2) Frykman, H. H.: Minn. Med., 38:19-27, January 1955. (3) McGivney, J.: Tex. State Jour. Med., 51:16-18, January 1955. (4) Quehl, T. M.: Jour. of Florida Acad. Gen. Prac., 15:15-16, October 1965. (5) Weekes, D. J.: NY State Jour. Med., 58:2672-2673, August 1958. (6) Ellis, S. and Spratt, J. S.: JOUR. AMER. GER. SOC., 18:410-415, May 1970.

The JOURNAL of the KANSAS MEDICAL SOCIETY

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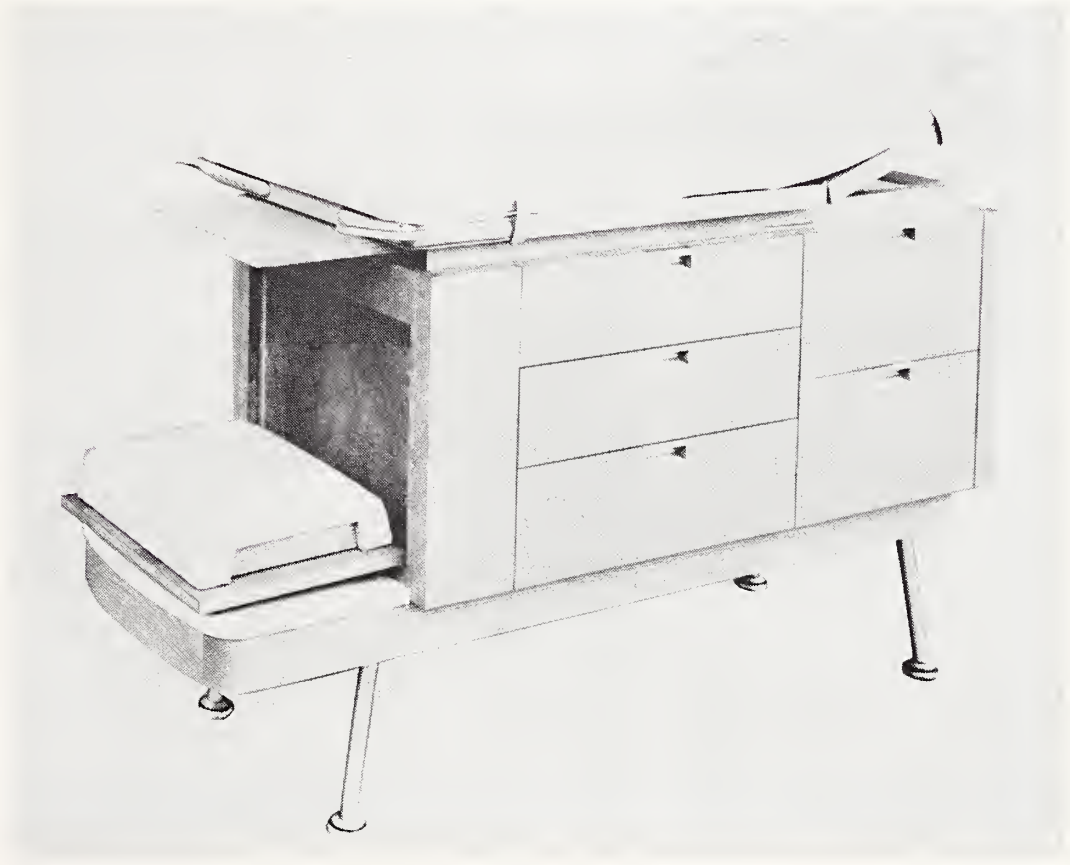
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Chronic Granulomatous Disease of Childhood

DAVID L. NELSON, M.D.,* *Minneapolis, Minnesota*

The discovery by Col. Ogden Bruton in 1952 of the human disease agammaglobulinemia opened a veritable Pandora's box whereby problems and adjustments of man in the absence or virtual absence of immune response could be observed and studied.

CHRONIC GRANULOMATOUS DISEASE of childhood (CGD) is an immunologic deficiency disease of man resulting from impairment in cellular immune mechanisms. The phagocytic cells of CGD patients fail to exhibit normal intracellular bactericidal capacity. Chronic granulomatous disease of childhood has been described in the literature under a variety of names including: syndrome of recurrent infection and infiltration of viscera by pigmented lipid histiocytes, fatal granulomatous disease of childhood, progressive septic granulomatosis, chronic granulomatous disease, congenital dysphagocytosis, and fatal granulomatosis of childhood. Other reports of acute and chronic granulomatous disease processes affecting children have occurred in the literature; however, in none of these cases has the peculiar functional defect of phagocytic cells which characterizes CGD been demonstrated. On the basis of clinical and pathological findings, Berendes, Bridges, and Good separated CGD from the other granulomatoses affecting children such as sarcoidosis, Wegner's granulomatosis, lethal midline granuloma of the face, cat scratch disease, lymphogranuloma venereum, toxic granulomatosis and the common bacterial

and fungal diseases resulting in granulomatous host responses.

Children afflicted with chronic granulomatous disease present a remarkably uniform clinical picture. Either sex may be affected, and the onset of chronic

Chronic granulomatous disease of childhood and other "Experiments of Nature" continue to present new possibilities for understanding the roles of various specific immune functions in the total bodily immunologic responsiveness of man.

and recurrent infections is usually within the first two years of life. The disease most frequently begins with a suppurative lymphadenitis involving the cervical region, but involvement of the axillary and inguinal lymph node groups is not uncommon. The lymphadenitis becomes chronic or recurrent and may undergo suppuration with spontaneous external drainage. Sinus tracts, which heal poorly, may extend into the soft tissues of the neck. A dermatitis of eczematoid or seborrheic nature, involving the periorbital skin, the skin about the mouth and nares, and the intertriginous areas in the inguinal and axillary regions often precedes or accompanies the lymphadenitis. Over the face, this dermatitis is associated with a chronic blepharoconjunctivitis. Hepatomegaly and splenomegaly are usually present at

* Dr. Nelson graduated from the University of Kansas School of Medicine in June, 1970, and is now interning at the University of Minnesota Hospitals, Minneapolis.

some time in the disease course, with hepatic and subdiaphragmatic abscesses requiring expedient surgical drainage being common. Chronic pneumonitic processes which respond poorly to therapy are present in most cases. The pulmonary manifestations range in severity from patchy bronchopneumonia to lobar pneumonia accompanied by empyema and abscesses. Chest roentgenographic findings include marked hilar lymphadenopathy and a peculiar "encapsulating pneumonia." Routine examination of the blood in CGD patients reveals a modest anemia unresponsive to iron therapy, appropriate PMN leukocytosis, persistently elevated erythrocyte sedimentation rate, and positive C reactive protein test. Serum globulin concentrations are variably normal to elevated, resulting mostly from increased amounts of immunoglobulin G. Alpha₂ and beta globulin fractions may be elevated.

The diagnosis of chronic granulomatous disease of childhood requires the demonstration of decreased *in vitro* intracellular bactericidal capacity of polymorphonuclear leukocytes or failure of polymorphonuclear leukocytes to reduce nitroblue tetrazolium dye during phagocytosis *in vitro*. The *in vitro* phagocytosis function test was described by Holmes, *et al.* and modified by Quie, *et al.* and consists of the following steps: (1) separation and quantitation of polymorphonuclear leukocytes from peripheral blood samples; (2) preparation of a suitable bacterial strain (usually *Staphylococcus aureus* 502A or *Klebsiella-Aerobacter*); (3) incubation of leukocyte-bacteria mixtures to allow phagocytosis; (4) sampling of the incubation mixture at various time intervals; (5) centrifugation of the aliquots to isolate the cellular elements; (6) lysis of the leukocytes in distilled water; and (7) determination of viable leukocyte associated bacteria by quantitative pour plate methods. Leukocytes from patients with CGD show decreased intracellular bactericidal capacity when compared to controls.

Baehner and Nathan have described two *in vitro* methods of demonstrating decreased nitroblue tetrazolium dye reduction by polymorphonuclear leukocytes from CGD patients during phagocytosis. The original histochemical test has been quantitatively adapted. The quantitative test consists of the following: (1) separation and quantitation of polymorphonuclear leukocytes from peripheral blood samples; (2) incubation of the leukocytes with 0.01M. KCN and 0.1 per cent nitroblue tetrazolium dye in the presence of latex sperules to stimulate phagocytosis; (3) centrifugation of the incubation mixture; (4) extraction of the cellular pellet with pyridine; and (5) spectrophotometric determination of $\Delta OD/Time/leukocyte$. Leukocytes from patients with CGD show low rates of nitroblue tetrazolium reduction compared to controls.

The characteristic pathologic lesion of chronic granulomatous disease is a typical infectious granuloma, of variable size, located in areas of inflammation. Bridges, *et al.* described these granulomas as consisting of rings of mononuclear cells surrounding an area of homogenous eosinophilic material associated with a few foreign body giant cells and a large number of mature and immature plasma cells. Carson, *et al.* describe two types of granuloma. The first consists of a caseous center surrounded by a narrow zone of compressed, elongated cells with deeply staining nuclei. Fibrosis is variably prominent and usually only a modest infiltrate of lymphocytes and plasma cells is present. In the second type of granuloma, the center contains loose collections of polymorphonuclear leukocytes with a wall consisting of plump epithelioid cells and numerous foreign body giant cells. The granulomas vary in size from a few millimeters to several centimeters in diameter, and are found in areas of infection including the lungs, lymph nodes, liver, spleen, and the skin of afflicted children. In addition to these granulomatous lesions, several authors have called attention to numerous pigmented lipid histiocytes in the distribution of the reticuloendothelial system in patients with CGD. These histiocytes are not found in granulomas or in areas of infection. The pigment contained within these histiocytes has the staining properties of lipofuscin, being PAS (-), Sudan Black (+), Schultz (-), Prussian Blue (-) and acid fast (-) in staining reaction. Electron microscopy of the lipid containing histiocytes reveals that the lipid is contained in numerous round to ovoid bodies (0.2-1.5 μ in diameter), occurring in the cytoplasm as free structures and as membrane bound aggregates. No myelin figures, bacteria, fungi or viral-like particles were seen in the histiocytes.

Cultures of infected lesions reveal that the clinical manifestations of CGD are the result of invasion by the low grade pathogens Enterobacteriaceae (usually *Klebsiella*, *Aerobacter*, or *Salmonella*), *Serratia marcescens*, and staphylococci. Staphylococci, either coagulase positive or negative, are the most common isolatable organisms. Unlike children with hypo- or agammaglobulinemia, children with CGD are not plagued by infections of pneumococcal, streptococcal, or hemophilus causation. Children with CGD have normal courses of the common viral diseases such as rubella, rubeola, varicella, and mumps. Primary smallpox vaccination is normal. Because of the unlikelihood of granulomatous inflammatory responses being associated with predominantly staphylococcal infection, numerous attempts have been made to isolate other microbiologic agents. Cultures for *Mycobacterium tuberculosis*, atypical *Mycobacteria*, *Nocardia*, *Blastomyces*, *Actinomyces*, *Histoplasma*, *Brucella*, *Pasturella*, *Listeria*, and other

more common bacteria and fungi have all been negative. Attempts to isolate viruses by the use of various animal inoculations and cellular culture techniques have been fruitless. Skin testing with histoplasmin, tuberculin, blastomycin, coccidioidin, cat scratch preparations, and Frei and Kveim antigens have generally been negative.

Studies on the immunologic competence of children with CGD have been extensive. Immunoglobulins A, M, and G are all present and there is a tendency for the titres of all immunoglobulin classes to be elevated. Serum concentrations of immunoglobulin G range from 1.5 gram per cent to 5.0 gram per cent. Electrophoresis reveals normal immunoglobulin mobility and no sharp peaks are present. Bone marrow aspiration reveals plasmacytosis without atypical cellular elements. Cryoglobulins and macroglobulins are absent. Natural agglutinins, heterolysins, isohe-magglutinins, and opsonins are present in normal amounts. Immunoglobulin responses to simple protein antigens (diphtheria toxoid) and lipopolysaccharide antigens (typhoid-paratyphoid vaccine) are normal. Formation of complement fixing antibodies (mumps vaccine) and virus neutralizing antibodies (commercial trivalent polio vaccine) is also normal. Furthermore, administration of immunoglobulin G has no effect on the clinical course of the disease. Serum complement levels may be normal or elevated. Delayed hypersensitivity responses to mumps antigen, house dust, and pollens have been demonstrated, and CGD patients have developed delayed hypersensitivity responses to 2-4 dinitrofluorobenzene, diphtheria toxoid-antitoxin precipitates, and autologous lymph node homogenates. One patient rejected a maternal homograft in 18 days. Mitogenic responses of lymphocytes to PHA stimulation are normal. Rebuck skin window inflammatory cycles and leukocyte migration studies utilizing the Pierce-Martin cell are normal. Normal clearance rates for colloidal gold and radioiodinated serum albumin are observed following intravenous injection. The phagocytic capacity of PMN leukocytes using Wood's technique with Type I pneumococcus is normal. Heterophile antibody tests and lupus erythematosus preparations are negative. Histologic examination of the lymph nodes of CGD patients reveals normal architecture with well developed germinal centers and plasma cell populations and also adequate development of the thymic dependent deep cortical regions.

Since chronic granulomatous disease is the result of ineffective intracellular bactericidal capacity, a brief review of this process in normal leukocytes will aid in understanding the peculiar defect present in CGD PMN leukocytes. Phagocytosis is the cellular process whereby phagocytic cells ingest and enzymatically decompose particulate matter. With re-

spect to bacterial destruction, phagocytosis involves the following: (1) contact of the bacterium with the cellular membrane of the phagocyte (may require "coating" of bacteria by serum opsonins); (2) invagination of the cellular membrane with envelopment of the bacterium to form a phagosome; (3) contact and fusion of lysosomal and phagosomal membranes with discharge of lysosomal enzymes into the phagosome; (4) intraphagosomal destruction of the bacterium; and (5) "excretion" of the phagosomal contents. Hirsch and Cohn demonstrated granule lysis and vacuole formation in PMN leukocytes following phagocytosis of bacteria. The precise mechanism of intraphagosomal bacterial destruction remains unknown although several non-specific acid hydrolases and species specific bactericidal cationic proteins have been isolated from PMN leukocyte granules. Recently, Klebanoff and White have shown that bacteria are iodinated within phagosomes following lysosomal fusion. These authors have proposed a bactericidal system involving myeloperoxidase, H_2O_2 and I^- .

The metabolic events accompanying phagocytosis in PMN leukocytes have been the subject of extensive investigation. The most striking changes that occur during phagocytosis are considerable increases in oxygen consumption and in the amount of glucose metabolized via the HMP shunt. There are less conspicuous increases in lactic acid production, glucose consumption, and glycogenolysis during phagocytosis. Incorporation of lipid precursors into cellular lipid is also increased during phagocytosis, but no net synthesis of lipid occurs. In addition, there is a marked increase in formate oxidation following particle uptake which is thought to reflect increased H_2O_2 production. Evidence for increased activity of the HMP shunt during phagocytosis was based on a twofold increase in conversion of glucose- $6C^{14}$ to $C^{14}O_2$ and a seven-fold increase in conversion of glucose- $1C^{14}$ to $C^{14}O_2$ following phagocytosis by aerobically incubated PMN leukocytes. The increase in oxygen consumption which follows phagocytosis has been shown to be cyanide insensitive and therefore not cytochrome linked. Sodium iodoacetate and sodium fluoride, both inhibitors of glycolysis, were shown to decrease glycolysis and to depress particle ingestion to a minimal level. Inhibition of cytochrome linked electron transport by cyanide and Antimycin A, and also uncoupling of electron transport by DNP had no effect on the capacity of leukocytes to ingest particulate matter. On the basis of these studies, Sbarra and Karnovsky postulated that particle ingestion was dependent on glycolysis for a source of ATP. Beck has shown that control of HMP shunt activity in PMN leukocytes is dependent on the intracellular concentration of NADP and the NADPH oxidizing capacity of the cell.

Methylene blue and phenazine methosulfate, both artificial electron acceptors, cause massive increase in oxygen consumption and HMP shunt activity in PMN leukocytes without phagocytic stimulation. Hirsch and Cohn proposed that the increase in lactic acid production by phagocytizing PMN leukocytes might cause destabilization of lysosomal membranes and granule lysis. Evans and Karnovsky were able to isolate a granule associated cyanide insensitive oxidase (H_2O_2 forming) capable of oxidizing NADH and NADPH with concomitant uptake of oxygen. This enzyme was more active toward NADH than NADPH and had a pH optimum of 4.8. The cytoplasm of PMN leukocytes has been found to contain a powerful NADPH linked lactic dehydrogenase. Evans and Karnovsky proposed that decreases in intracellular pH caused by increased lactate production activate both enzymes. The action of the NADH oxidase would result in a lack of NADH to convert pyruvate to lactate and the excess pyruvate would then be available for use by the NADPH linked lactic dehydrogenase resulting in increased NADP to stimulate HMP shunt activity. Iyer, *et al.* and Iyer and Quastel proposed that a granule associated NADPH oxidase was released into the cytoplasm of phagocytizing leukocytes and accounted for the observed increases in oxygen consumption, HMP shunt activity, and formate oxidation which accompany phagocytosis. Cagan and Karnovsky and also Rossi and Zatti were unable to isolate the cytoplasmic NADPH oxidase described by Iyer, *et al.* Rossi and Zatti were able to isolate the NADH oxidase described by Evans and Karnovsky, but found much higher activity of NADH and NADPH oxidases in the granules of PMN leukocytes and, on the basis of morphologic studies, proposed oxidation of NADH and NADPH by "mitochondria-like" lysosomes. While these studies are by no means conclusive, the NADPH or NADH oxidases appear to play a central role in the increases in oxygen consumption, HMP shunt activity, and formate oxidation observed in phagocytizing leukocytes.

Following the discovery by Holmes, *et al.* that intracellular bactericidal capacity of PMN leukocytes from CGD patients was decreased, investigators have sought to determine which event in phagocytosis is responsible for the observed deficiency. The studies of Holmes, *et al.* and Quie, *et al.* on CGD PMN leukocytes revealed that ingestion of bacteria by the PMN leukocytes was normal. Serum opsonin activity in CGD patients has been shown to be normal. The granules of PMN leukocytes from CGD patients were shown to contain normal amounts of phagocytin, lysozyme, beta-glucuronidase and acid phosphatase. Using both light and electron microscopy combined with histochemical staining techniques, Quie, *et al.* were able to show that CGD

and control leukocytes were similar in morphology and histochemical staining reaction prior to phagocytosis. The initial phagocytic function studies by Holmes, *et al.* revealed that PMN leukocytes from CGD patients displayed less degranulation and vacuole formation than control leukocytes following phagocytosis of bacteria. Quie, *et al.*, and Holmes and Page were able to histologically demonstrate decreased degranulation, vacuole formation and intraphagosomal bacterial lysis following phagocytosis of bacteria by CGD PMN leukocytes. Other authors have been unable to demonstrate defective degranulation and vacuole formation in PMN leukocytes from CGD patients.

Studies on the biochemical reactions subsequent to phagocytosis in CGD PMN leukocytes have been performed in an attempt to define an "inborn error of metabolism." Resting and phagocytosis stimulated rates of glucose consumption, lactate production, glycogen breakdown, lipid synthesis, and glucose utilization via glycolysis in CGD PMN leukocytes are normal. However, PMN leukocytes from CGD patients consistently failed to show increases in oxygen consumption, HMP shunt activity and formate oxidation following phagocytosis. In addition, Holmes, *et al.* found decreased HMP shunt activity in CGD PMN leukocytes at rest. Enzymatic deficiencies in the HMP shunt were ruled out by metabolic manipulation with methylene blue and pyruvate which converted HMP shunt activity to normal in CGD PMN leukocytes during phagocytosis. Malawista and Bodel demonstrated that when normal leukocytes were incubated with colchicine during phagocytosis, these leukocytes ingested particles normally, but morphologically failed to degranulate, and failed to show increases in oxygen consumption and HMP shunt activity, i.e. were similar to CGD PMN leukocytes. Holmes *et al.* have proposed that defective degranulation and the failure to increase oxygen consumption, HMP shunt activity, and formate oxidation are causally related and result in the observed increased intracellular bacterial survival in CGD PMN leukocytes. The metabolic alterations observed in CGD PMN leukocytes following phagocytosis are consistent with an absence of NADH or NADPH oxidases. Holmes, *et al.* found normal amounts of NADH and NADPH oxidases in granules of resting CGD PMN leukocytes. Holmes (Ph.D. thesis, University of Minnesota) demonstrated normal amounts of NADH and NADPH oxidases in homogenates of CGD PMN leukocytes. On the basis of their qualitative nitroblue tetrazolium dye reduction test, Baehner and Nathan concluded that failure to reduce nitroblue tetrazolium dye, an artificial electron acceptor, was indicative of absence of NADH or NADPH oxidases in leukocytes from CGD patients. Baehner and Nathan, using the tech-

nique of Cagan and Karnovsky, showed that CGD PMN leukocytes contained extremely low levels of NADH oxidase compared to controls. Thus, while the metabolic abnormalities demonstrated by CGD PMN leukocytes are consistent with the absence of the NADH oxidase and NADPH linked lactic dehydrogenase described by Evans and Karnovsky, the presence of these enzymes in CGD PMN leukocytes is controversial. Zatti, Rossi and Meneghelli have shown increases in HMP shunt activity prior to complete engulfment of bacteria by normal PMN leukocytes. They feel that granule lysis is the result of metabolic alterations induced by particle contact at the cellular membrane. However, Malawista and Bodel have shown by washing leukocytes free of bacteria that increases in oxygen consumption, HMP shunt activity, and formate oxidation are not dependent on continued particle ingestion. Holmes, *et al.* have postulated that particle ingestion is metabolically associated with increases in glycolysis, lactate production, and lipid synthesis, and that degranulation is associated with increases in oxygen consumption, HMP shunt activity and formate oxidation. The question of whether or not degranulation is causally related to the metabolic alterations observed following phagocytosis has not been completely answered.

A selectivity of PMN leukocyte dysfunction in CGD patients has recently been reported. Several authors have shown that intracellular killing of streptococci is normal in the face of impaired degranulation and defective intracellular staphylococcal bactericidal capacity. Davis, *et al.* have shown intracellular killing of *Serratia marcescens* is normal in CGD PMN leukocytes which fail to kill *Staphylococcus aureus*. In addition to the functional defect in circulating PMN leukocytes in CGD patients, recent studies have demonstrated that the intracellular bactericidal capacity of peripheral blood monocytes in CGD patients is comparable to that of CGD PMN leukocytes. These findings suggest a similar defect in fixed tissue macrophages. Good, *et al.* have proposed that fixed macrophages may be unable to dispose of endogenous or exogenous lipid membranes, resulting in the lipid histiocytosis reported by several authors.

The original description of CGD by Berendes, Bridges and Good suggested a possible X-linked recessive mode of inheritance. All four of their original cases were males and one child had a provoking family history—in three previous generations on the maternal side of the family (with the exception of the grandfather and great-grandfather), all male family members had died during infancy with a syndrome described either as "boils" or "scorfula." Clinical experience revealing the regular occurrence of CGD in males and its familial occurrence in cousins

and one incidence in which a suspected carrier mother produced two afflicted sons from matings with two healthy fathers, presented presumptive evidence that the disorder was transmitted in an X-linked recessive manner. The availability of functional, histochemical and metabolic tests has made a more formal genetic analysis possible. Windhorst, *et al.* have shown that the leukocyte phagocytic function test which was abnormal in afflicted males is abnormal to an intermediate extent in their mothers. Nine of nine mothers tested were intermediately abnormal, whereas none of eight fathers and none of five healthy brothers were abnormal. Ten of sixteen female siblings were abnormal to the same extent as their mothers, as were all three maternal grandmothers tested. Using the phagocytosis histochemical nitroblue tetrazolium dye test, Windhorst, *et al.* were able to demonstrate that the intermediate levels of nitroblue tetrazolium dye reduction were the result of two populations of PMN leukocytes, one with, and one without the ability to reduce nitroblue tetrazoline dye *in vitro*. Windhorst, *et al.* interpreted this finding as indicative of mosaicism according to the Lyon hypothesis. Windhorst, *et al.* were also able to demonstrate intermediate rates of increased HMP shunt activity following phagocytosis in mothers of boys with CGD.

Several cases of CGD have been reported in females. Grush and Mauer, and Baehner and Nathan studied the parents of their female cases and were unable to demonstrate carrier status in either parent using nitroblue tetrazoline dye reduction techniques or phagocytic function tests. The girl reported by Baehner and Nathan was the product of a consanguineous marriage. Quie, *et al.* were unable to demonstrate carrier status by phagocytosis function tests in either parent of the girl they reported with CGD. Azimi, *et al.* have described three Negro sisters with characteristic CGD phagocytosis function test and nitroblue tetrazoline dye reduction abnormalities. Both parents and one male sibling were normal for leukocyte phagocytosis function tests and leukocyte nitroblue tetrazolium dye reduction. These findings are suggestive of an autosomal recessive mode of inheritance with no demonstrable abnormalities in heterozygotes. In view of the increasing genetic heterogeneity of this disease, it is important to recognize that the phenotypic expression of decreased intracellular bactericidal capacity and nitroblue tetrazolium dye reduction may be the result of several genotypes transmitted by different modes of inheritance. More specific definition of the leukocyte defect in chronic granulomatous disease will permit more accurate genetic analysis.

The prognosis for patients with CGD remains poor. In Good's series of 18 patients, only eight are alive and the oldest survivor is 11 years old. Baehner

and Nathan reported one case in a 17-year-old female, and Davis, *et al.* reported a boy who survived to age 19. Attempts at therapy have generally been fruitless. Administration of antibiotics including chloromycetin, erythromycin, penicillin, sulfas, tetracyclines, novobiocin and various combinations of these drugs have been ineffective in terminating infections. Prophylactic antibiotics do not seem to alter the disease course. Parenteral gammaglobulin and blood transfusions have not been beneficial in combating infections. Staphylococcal vaccines have generally been without benefit. Multiple buffy coat transfusions and vitamin A therapy to the point of toxicity have been useless. Therapy with methylene blue has not been attempted, but *in vitro* studies have failed to demonstrate increased intracellular bactericidal capacity following its inclusion in incubation mixtures. Windhorst, *et al.* have encouraged testing of family members to identify carriers, and genetic counseling should be available.

As the investigation of chronic granulomatous disease of children has progressed, the heterogeneity of this disorder has become more evident. All authors agree, however, that PMN leukocytes from CGD patients are defective in intracellular bactericidal capacity for *Staphylococcus aureus*. Some investigators, on the basis of histochemical, light and electron microscopic studies, attribute increased intracellular bacterial survival to defective degranulation of lysosomes which are enzymatically competent. Other authors, using similar techniques, have been unable to demonstrate defective degranulation of CGD PMN leukocytes following phagocytosis. Baehner, *et al.*, using the method of Cohn and Hirsch, found normal amounts of lysosomal enzymes in the granules from CGD PMN leukocytes and were able to demonstrate normal release of lysosomal enzymes into the cytoplasm of the leukocytes following phagocytosis. The investigators who propose defective degranulation as the cause of increased intracellular bacterial survival believe a causal relationship exists between degranulation and the metabolic increases in oxygen consumption, HMP shunt activity, and formate oxidation. Whether degranulation is the cause or the result of these metabolic alterations is not specified, but the studies of Zatti, Rossi, and Meneghelli seem to indicate that degranulation temporally follows the onset of the metabolic changes which have been associated with granule lysis. The role of the various pyridine oxidases in these metabolic changes in normal PMN leukocytes is unclear, and equally uncertain is whether or not these oxidases are present in normal amounts in CGD PMN leukocytes.

Several investigators have shown that the intracellular bactericidal defect for staphylococci does not apply to certain other species of bacteria. Kaplan,

et al. and Quie, *et al.* have shown that streptococci are killed in a normal fashion by CGD PMN leukocytes. Davis, *et al.* have described one case of CGD in which PMN leukocytes were able to kill *Serratia marcescens* normally. However, Holmes, *et al.* have shown that CGD PMN leukocytes fail to kill *S. marcescens* in a normal fashion. Zeya and Spitznaegle have reported a method whereby this selective bactericidal defect might be examined. The studies of Klebanoff and White have given a possible explanation for the selective bactericidal defect in CGD. As mentioned earlier, these authors have proposed a bactericidal system of H_2O_2 , I^- and myeloperoxidase. Myeloperoxidase and I^- are presumably delivered to the phagosome by lysosomal fusion. Hydrogen peroxide could presumably be delivered to the system either by the PMN or the bacteria itself. *Lactobacillus acidophilus*, streptococci and pneumococci, being catalase negative, produce H_2O_2 and are killed normally by CGD leukocytes. *Serratia marcescens*, being catalase positive, produces no excess H_2O_2 , and it is not killed by CGD leukocytes. As mentioned earlier, H_2O_2 production in CGD PMN leukocytes is diminished and may indeed account for the bactericidal defect and its selectivity, i.e. CGD PMN leukocytes being able to kill only those organisms which can contribute H_2O_2 to the proposed iodination bactericidal system. It has become apparent that chronic granulomatous disease may represent a number of intracellular defects which all result in the observed decreased intracellular bactericidal capacity for certain bacteria, and the observed abnormalities in leukocyte metabolism seen during phagocytosis.

While the precise cause of chronic granulomatous disease of childhood remains unknown, this disease has presented an interesting model in which the contributions of the phagocytic populations of cells to the overall immunologic responsiveness of humans might be studied. Bridges, *et al.* described a child with CGD who died of overwhelming nocardia sepsis following a haying expedition, and two cases of fatal aspergillus pneumonia in patients with CGD have been described by Oh, *et al.* Thus, while immunologic competence for fungi is usually attributed to cellular immune mechanisms of delayed hypersensitivity type, PMN leukocytes and macrophages may represent a front line of defense, which in these cases was overwhelmed by the massive infective dose and the inherent functional phagocytic defect. Macfarlane, *et al.* have shown that CGD PMN leukocytes are also deficient in virucidal capacity. Yet, these children have normal courses of the common viral diseases, further reinforcing the concept that antibody-complement reactions and lymphocyte responsiveness may represent the important lines of defense against viral diseases. The interesting find-

ing that two different sets of bacteria plague children with agammaglobulinemia and children with CGD is indicative of the importance of each of the absent immunologic defense mechanisms in combating sepsis by groups of bacteria. The importance of phagocytic cells in terminating infections even in the presence of therapeutic levels of bactericidal antibiotics may be seen in the poor response of CGD patients to antibiotic administration. The skin, with its

cornified epithelial layers is often considered a natural immunologic barrier in itself; however, the proclivity of CGD patients to develop an infective dermatitis would seem to indicate that phagocytic cells play an important role in the immune function relegated to the skin.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 1300 Topeka Avenue, Topeka, Kansas 66612.

Charter to Student Medical Society

Kansas chalked up another first in medicine when the Medical Society presented a charter allowing medical students full membership in the organization.

"This is one of the most significant events in the Society's 111-year history," Dr. Francis T. Collins, Topeka, KMS president, said during the presentation of the charter at the Ramada Inn in Topeka. "It reflects the tempo of the times. Young people have earned the right to be in the mainstream of policy making, and we welcome the considerable contributions they will make to the Kansas Medical Society."

Accepting the charter for the University of Kansas Student Medical Society was its President, Larry McDonald of Beloit. Other officers are Herbert A. Hartman of Lawrence, vice president, and Louis Forster of Topeka, secretary. The new society is composed of 500 students at the KU Medical Center in Kansas City, Kansas.

Dr. Collins explained that the charter presentation was made possible by a recent change in the By-Laws of the Society. The change allows regularly enrolled students at the University of Kansas School of Medicine all privileges of membership including the right to run for office.

In other state societies medical students are allowed only associate or affiliate memberships.



A Case Report

Low Voltage in Carcinoid Syndrome

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Introduction

THE ELECTROCARDIOGRAPHIC MANIFESTATIONS of carcinoid syndrome have been previously described. P pulmonale, right ventricular overload, right axis deviation, and right bundle branch block are commonly observed and have been attributed to pulmonary disease as well as intrinsic cardiac lesions. ST segment and T wave changes occur frequently and may be related to hypokalemia.¹ Low voltage has also been reported.^{1, 2} The following case illustrates a remarkable reduction in QRS voltage associated with the carcinoid syndrome.

Case Presentation

A 52-year-old housewife entered the hospital complaining of flushing episodes, diarrhea, swelling of the legs, right upper quadrant pain, nausea, and anorexia. These symptoms had been present since 1965. At that time a malignant carcinoid tumor was resected from the cecum and hepatic metastases were demonstrated. During the ensuing four years she had been treated with parachlorophenylalanine and cyclophosphamide.

Physical examination revealed a well developed woman who appeared chronically ill. Blood pressure was 130/80. Pulse was 70 and regular. Lungs were clear to percussion and auscultation. Cardiac auscultation revealed a Grade III harsh systolic ejection murmur over the pulmonic area. A Grade II high frequency pansystolic murmur was present along the lower left sternal border which had inspiratory augmentation. Hepatomegaly was present with the liver palpable down four fingerbreadths below the right costal margin. A tender, non-movable mass was present in the epigastrium and appeared attached to the liver. Two plus pitting pretibial edema was present.

On August 15, 1969, an abdominal laparotomy was performed and the hepatic artery was cannulated. This cannula was attached to an infusion

pump and 5-fluorouracil was administered directly into the hepatic artery at a rate of 200 milligram per 24 hours. On August 17, the patient complained of severe abdominal discomfort and developed tachycardia and diaphoresis. On the morning of August 18, the patient was in shock with unobtainable blood pressure. Physical examination revealed a marked diminution in the intensity of her heart murmur. Heart tones were barely audible. Pulsus alternans was present. Central venous pressure was 24 centimeters of water and a 10 millimeter paradoxical pulse was observed. These physical findings

Electrocardiograms from a patient with carcinoid syndrome are presented. Marked diminution of limb lead QRS voltage occurred during the terminal illness. The clinical features of this case, together with low voltage on the electrocardiogram, suggested cardiac tamponade. However, pericardiocentesis and autopsy provided no evidence of cardiac tamponade. The etiology of low voltage in carcinoid syndrome is discussed.

and a marked diminution of voltage on the electrocardiogram (*Figures 1, 2, and 3*) suggested the possibility of pericardial effusion. Despite repeated attempts at pericardiocentesis, no pericardial fluid was obtained and the patient died quietly approximately one hour later.

At gross autopsy examination the heart weighed 250 grams. There was endocardial fibrosis of the right atrium. Severe sclerosis of both tricuspid and pulmonic valves was present. Although focal recent hemorrhage was present at the site of the attempted pericardiocentesis, no pericardial effusion was observed. There was no significant emphysema and no pleural effusion was demonstrated. Multiple tumor metastases were present in the liver. No anatomical explanation for the shock picture was found and a massive release of serotonin caused by tumor necrosis was postulated.

Microscopic examination of the heart revealed an accumulation of hyalinized amorphous material in

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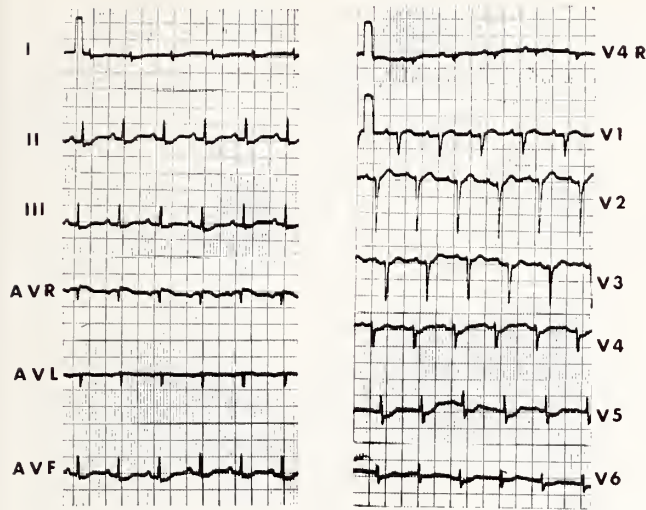


Figure 1. The tracing demonstrates right atrial hypertrophy, vertical frontal plane QRS axis, and poor precordial R wave progression.

the subendocardium of the right atrium and involving both the tricuspid and pulmonary valves. The myocardium was normal.

Discussion

Many causes of low QRS voltage have been described. Myxedema, pericarditis, emphysema, anasarca, pleural and pericardial effusions, Addison's disease, myocardial fibrosis, myocardial atrophy and endocardial fibroelastosis have all been associated with low voltage.^{3, 4, 5} Although low QRS voltage

has been described with carcinoid syndrome, its pathophysiology is poorly understood. The abrupt diminution in QRS voltage observed in our patient suggests that neither chronic valvular sclerosis nor endocardial fibrosis is responsible. Our case also demonstrates that low QRS voltage can occur in carcinoid syndrome without pericardial effusion. This is particularly important to recognize since accompanying physical findings may suggest cardiac tamponade.

Low voltage in the frontal plane may be due to cardiac forces which are perpendicular to this plane.⁵ In our case, low voltage was observed only in the frontal plane, although some diminution of precordial voltage also occurred. It is possible that a shift in the anatomical position of the heart may have resulted in a change in electrical axis, thereby diminishing voltage. Nevertheless, the presence of low frontal plane voltage alone is pathological and has prognostic significance.⁵

References

1. Mengel, C. E.: Carcinoid and the heart. *Mod. Concepts of CV Dis.* 35:75-80, 1966.
2. Roberts, W. C., and Sjoerdsma, A.: The cardiac disease associated with the carcinoid syndrome. *Amer. J. Med.* 36:5-34, 1964.
3. Armstrong, N. L.: *Electrocardiograms, a systematic method of reading them.* Baltimore: Williams and Wilkins Company, 1960.
4. Massie, E., and Walch, T. J.: *Clinical Vectorcardiography and Electrocardiography.* Chicago: Year Book Publishers, Inc., 1960.
5. Watts, R., and Gursal, K.: A study of cases manifesting low voltage in the frontal plane electrocardiographic leads. *Circulation* 19:595-599, 1959.

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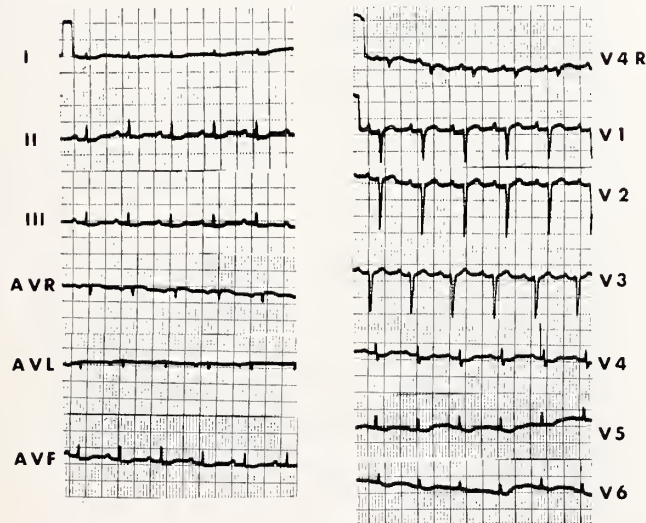


Figure 2

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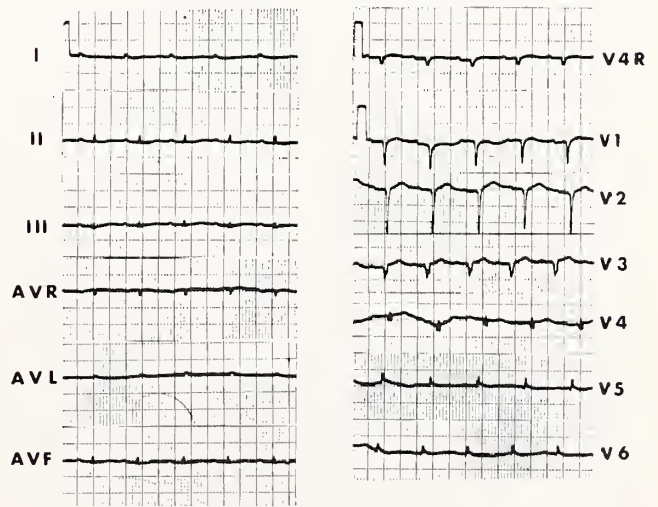


Figure 3

Figures 2 and 3. These tracings demonstrate a progressive diminution in QRS amplitude in the frontal plane.

Learning by Simulation

The Validation of Disaster Simulation:[†] Medical Scheme Planning

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Free Disasters

HOW DO DISASTER planners plan? What comprises a disaster plan? More importantly, how can such a plan be evaluated? Will the plan developed accomplish the postdisaster mission? Planning the use of community resources for the medical care needs of disaster casualties are manifold. Even though a community plan is developed by a planner who has been intimately associated with a disaster, his experience remains limited.

Before planning considerations are relevant, they must be tested. Simulation offers the only means other than actual disaster; therefore, planners should be satisfied that the mock disaster can be simulated realistically. The Health Resources Planning Unit of the Texas Hospital Association has developed a simulation technique which is invaluable in supplementing the limited information obtained by the planner from real disaster experiences. The Disaster Environmental Simulator (DES)¹ provides free disaster: free in terms of lost lives, and losses in the economy, and free of injury and undue suffering. It is a vehicle to simulate the important aspects of *any* type disaster of *any* scope and in *any* locale. It is equally applicable to either man-influenced or natural disasters. It was developed precisely for planning properly the medical actions required in a postdisaster environment. It provides the planner an opportunity to play a disaster game and test his plan against many different disaster situations.

Prior to simulation, a potential disaster area is divided into geographical segments. Within each segment or geographical area an inventory is estab-

lished. The inventory consists of *people* (doctors, nurses, paramedics, and nonmedical persons) and *things* (vehicles, medical supplies, and medical treatment facilities). The DES is composed of four computer programs—Disaster Effects, Medical Input, Decision Cycle, and Mortality/ Recovery.²

The Disaster Effects (DE) Program applies the prescribed or planned damage or destruction to physical things and injury or death to the population. The DE establishes the initial postdisaster scenario

The authors have demonstrated that disaster simulation by computer techniques can be accurate and useful in planning disaster management. Much of the data used here is from the Topeka tornado of June 8, 1966, which is well remembered and adds local interest.

including the categorization of the injured.³

The Medical Input Program establishes a semi-fixed description of the medical treatment philosophy to be applied to the casualties of each injury class at prescribed levels of care.* This description is in terms of requirements for treatment resources and the application of these resources as a function of time to obtain recovery or mortality probabilities.

The Decision Cycle Program (DC) then uses the functions prescribed in the Medical Input by allocating available resources to the casualties in accordance with specified priorities. The treatment level of the casualties is raised if the required resources are available, thereby improving survival probability. Conversely, prognosis for survival is penalized when resources required for treatment are lacking. The DC includes a movement sub-routine which makes possible the transportation of casualties or movable resources from area to area. The DC routine provides the game player, the researcher or the planner, an opportunity to use varied concepts of the medical

* Gordon A. Bohn is a research associate and Dr. Charles G. Richie is the computer scientist for the Health Resources Planning Unit of the Texas Hospital Association.

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* When new information indicates, the medical input data may be readily changed.

resources/casualty movement mix to determine the best survival potential. The DC makes available at a specified simulation time the casualty and resource status of each geographical area and a summary of these data for the entire disaster area.

The Mortality/Recovery Program (M/R) provides a means for the evaluation of disaster management philosophies. The Mortality/Recovery Program categorizes the dead and recovered by injury class, level of care, and geographical area. Timely reports made available from the M/R provide a tool for the evaluation of the medical treatment philosophy prescribed in the Medical Input Program and the disaster manager's concepts and decisions applied in the Decision Cycle Program.

The Disaster Scenario

The value of any simulation depends upon the accuracy of its portrayal of the real situation, and the shrewdness and imagination of the persons who put the simulation to use.⁴

A disaster scenario is designed separately for each disaster. Each is handtooled to match the specific results of each independent occurrence, and requires for input data: (1) the general geographic locale; (2) the number and location of casualties by type which occurred in the area of the population-at-risk; (3) the numbers of medical resources available pre- and post-disaster, including medical treatment persons, medical supplies, and medical treatment facilities (which include fixed hospitals, operating rooms, and emergency-type resources such as Packaged Disaster Hospitals, Natural Disaster Hospitals, and Hospital Reserve Disaster Inventory [HRDI] units); (4) the method of movement and time required to move from point of casualty occurrence to medical treatment; and (5) transport available by type and the road net capability.

Most of the data identified above to establish the basic scenario are readily available; however, when one is confronted with the simulation of an actual disaster, some data are unavailable in a neatly packaged format and must be drawn from informational type sources. As an example: data on mode of transport and time of arrival to treatment of each specific case is not available but news articles may state: "The majority of injured were transported in private vehicles by family members or friends." "The only ambulance company had two ambulances which transported severely injured persons." "Most casualties were in hospitals within the first hour following disaster." A study of these types of quotations leads to the assumption that all modes of ground transport were used and that the expertise of organized ambulance transport for all casualties was not used, also that a high percentage of all casualties was at place of treatment in a comparatively short time.

Casualty Input Data

Initially, one set of input data was prepared and considered feasible for use in all types of disaster simulations. Continued analysis of the results of research problems indicated that the classification of casualties and the use of medical resources and treatment priorities were not the same for natural as for large scope nuclear disasters. (The validation of the DES input has been restricted to natural disaster scenarios. No complete data currently exists—and fortunately so—for nuclear disaster simulations.)

Much information has been reviewed pertaining to the medical aspects of the aftermath of natural disaster situations and to the many support functions required to make the medical schema work. Although much data are available some of the bits are lacking; especially, the information is not in the complete data form required of the simulation.

One data bit so necessary in the validation effort which normally is not available encompasses the casualty himself. What is the specific diagnosis and age of each injured individual? Not enough for the portrayal of a disaster result is knowing the mere number of abrasions, contusions, lacerations, and fractures. Severity, body location, combined injuries, and general physical condition and age of each casualty are all necessary to categorize casualties by injury class. More succinctly, the severity of the injury with respect to vital systems of the body, the urgency of treatment in terms of death and extended disability and the extent of treatment—is it formidable or minor—are the theme of this classification. A description of injury classes used in the simulation program is shown below:

INJURY CLASS 1—Significant damage to vital system temporarily correctable by first aid methods.

INJURY CLASS 2—Significant damage to vital system correctable by emergency medical care.

INJURY CLASS 3—Significant increase in mortality if required medical care is delayed.

INJURY CLASS 4—No significant increase in mortality due to delay in medical care.

INJURY CLASS 5—Effectiveness of medical care is doubtful or required too early to be available or requires inordinate amount of resources which could otherwise be available for other classes.

INJURY CLASS 6—Recovery is expected with minimum care but assistance is required.

INJURY CLASS 7—Recovery expected with minimum medical care without assistance.

INJURY CLASS 8 TO INJURY CLASS 11—Classes suffering radiation sickness not normal to a natural disaster.

Study of natural disaster results generally indicates that classification of the injured who arrive at a treatment facility may be adequate if only three broad

TABLE 1
REAL TOPEKA CASUALTY DATA*

Diagnosis	Hospitals				Inj. Class	Hosp. Days
	1	2	3	4		
Open wound of the scalp, multiple contusions and abrasions, with traumatic <i>shock</i> , concussion, fractured radius and ulna		x			2	1
Open wound of hip with fractured humerus		x			2	47
Compound fracture, elbow; fractured radius; multiple contusions and lacerations of forehead and thigh; <i>shock</i>				x	2	25
Fracture, multiple, comminuted, humerus, <i>shock</i> . Multiple contusions of head, gastric dilation				x	2	35
Multiple scratches and abrasions severe. Area not reported			x		3	16
Lacerations with abrasions, severe			x		3	18
Multiple lacerations and abrasions	x				3	14
Lacerations of scalp, foreign bodies	x				3	8
Lacerations of scalp, severe	x				3	8
Multiple contusions of head and eye; laceration lower eye lid and nose; conjunctival hemorrhage				x	3	18
Avulsion laceration leg, extensive. Mild <i>shock</i>				x	3	14
Multiple severe laceration of scalp. Contusion upper arm and eye				x	3	17
Multiple severe lacerations of forearm and upper arm, muscle involvement				x	3	14
Laceration cheek. Contusion spine and cervical area				x	3	4
Multiple abrasion of legs. Laceration of forehead				x	3	5
Multiple abrasions and contusions face and arms. Sprain ankle. Mild shock				x	3	5
Contusions and lacerations of scalp. Severe contusion shoulder. Questionable fracture of ribs				x	3	21
Deep laceration of scalp. Mild <i>shock</i>				x	3	14
Fracture clavicle. Open wound of leg		x			3	38
Fractured femur		x			3	23
Pneumothorax, traumatic		x			3	3
Open wound of the scalp with contusions and abrasions		x			3	14
Open wound of hip and thigh		x			3	14
Open wound of knee and leg		x			3	6
Superficial injuries, multiple		x			3	8
Superficial injuries, shoulder and arm		x			3	32
Fractured ribs		x			4	6
Fractured lumbar vertebrae		x			4	36
Fractured lumbar vertebrae		x			4	32
Fractured humerus		x			4	14

* A comparative review of data reported in the *Journal of the Kansas Medical Society*,⁸ the Shawnee County Medical Society *Bulletin*, No. 10,⁹ and data shown herein indicates inconsequential discrepancy. The information shown in Table 1 used for this simulation validation is that received from the four individual hospitals in individual diagnosis form and the only data by which injury class could be categorized.

<i>Diagnosis</i>	<i>Hospitals</i>				<i>Inj. Class</i>	<i>Hosp. Days</i>
	1	2	3	4		
Fractured scapula and pelvis		x			4	42
Sprains, strains sacroiliac		x			4	9
Sprains, strains neck		x			4	7
Multiple contusions		x			4	7
Fractured ankle	x				4	9
Multiple rib fractures	x				4	35
Contusion, back, probably severe			x		4	14
Fracture, ribs, probably severe			x		4	16
Fracture ribs, probably severe			x		4	9
Exposure, <i>shock</i>				x	4	14
Whiplash, pain neck and shoulders				x	4	7
Multiple contusions and abrasions of legs, contusions and abrasions of scalp				x	4	17
Fracture 10th rib, back injury				x	4	7
Possible fracture, humerus				x	4	7
Fractured tibia, fibula, lumbar vertebra and femur	x				5	49
Concussion with GI tract injury, amp. leg, fractured femur	x				5	2
Concussion	x				5	27
Pneumothorax, traumatic, with fractured ribs, humerus, ankle	x				5	48
Coma <i>shock</i> . Base skull fracture. Multiple lacerations scalp. Compound fracture femur. Severe lacerations shoulder, multiple abrasions and contusions				x	5	31
Laceration hands and tendons	x				6	4
Laceration, nose, face, scalp, and chest	x				6	4
Fractured metacarpals		x			6	7
Superficial injuries face and neck		x			6	1
Puncture wound, lower extremity. Multiple contusions and abrasions				x	6	4
Excision of foreign bodies, hand	x				7	2
Suspected fractured ankle, not found	x				7	1
Concussion		x			7	3
Open wound of scalp		x			7	4
Superficial injuries		x			7	1
Superficial injuries, trunk		x			7	1
Superficial injuries, trunk		x			7	1
Multiple contusions, mild shock, question of wrist fracture				x	7	3

casualty categories are identified.⁵ These may be: (1) those requiring medical treatment with or without short-term hospitalization, (2) those requiring immediate life-saving treatment, and (3) those whose treatment may be delayed if necessary without decreasing significantly survival potential or increasing possible disability. These conditions preclude the consideration of the expectant category (Class 5 above). This reasoning seems appropriate because a high casualty overload does not result from *most* natural disasters. Normally, shortages of treatment resources are not experienced and most casualties receive timely, optimum care.

In some disasters such as the tornado experienced by Jonesboro, Arkansas, in May, 1967,⁶ all required treatment facilities were not available in the immediate disaster area, and casualties, after initial care, were evacuated to more adequate facilities for definitive and continuing treatment. Accordingly, disaster plans must identify alternate facilities in adjacent areas for the continued care of casualties when they can be moved from the disaster area.

Irrespective of the categories used, the principal difficulty occurs in determination of injury class, among the seriously injured, since the urgency for emergency care in terms of consequence of delay and extent of treatment is not clearly evident.

Ideally, classification by injury class must be accomplished by the sorting officer at time of disaster, for on-the-spot professional judgment plays a large part in this task. Unless this ideal ultimately is attained, the optimum classification will not be gained from diagnosis listings, and this variable difficulty will continue.

Validation Concept

Regardless of the deficiency of completely satisfactory real data from many sources, those resulting from and made available from the Topeka, Kansas, tornado of June 8, 1966,⁷ have been used extensively to assure that input data used in the simulation will factually simulate the postdisaster medical experiences of the Topeka incident.^{8, 9}

The information furnished the Planning Unit by Topeka authorities is the most complete processed to date; however, it was not absolutely descriptive of the extent of injury sustained in each case (*Table 1*). Therefore, classification was made by the research staff from diagnoses furnished by the four different hospitals. On-the-spot professional judgment aspects with respect to the injury classification were absent. However, by resorting to the definition of classes of injury used in the DES, it was deduced that the majority of the seriously injured not clearly described by diagnosis and specifically classifiable belonged in Injury Class 3. With added assistance from the data

source a limited number of Class 5 injuries were identified.

Validation criteria for this exercise were considered as a comparative function of mortality/morbidity over time of the total admissions for all injury classes, and by separate injury classes. The medical input data would be considered valid if the simulated results showed no significant difference from the mortality and morbidity experienced in Topeka.

Validation Results and Analysis

Table 2 and *Figures 1* through *3* are graphic representations of the comparison between the results of the real Topeka occurrence and those of the program simulation. *Table 2* shows the numeric comparison of beds occupied by injury class and by the total throughout the length of the treatment effort.

Not shown in the tables is the consideration given to the unadmitted with minor injuries who were initially treated by emergency medical care on an outpatient basis and eliminated from hospital consideration during the period of the emergency. These were processed only through the program sorting and emergency medical care mechanisms. These patients required personnel and supply resources during the period zero through the first six hours postdisaster to match a real situation. Then they were dropped from the simulation and returned to the general uninjured population. The total numbers of casualties initially treated within the four hospitals for each scenario were:

Minor Casualties (not admitted)	316
Casualties (admitted)	62
	378

Table 2 also indicates deaths. Of the 378 casualties treated, two incidents of deaths occurred according to the real disaster reports, and three within the simulation exercise. Injury classes and times of death compare as follows:

	Topeka	Simulation
Class 2	First Day	First Hour
Class 3		Second Day (24-48 hrs.)
Class 5	Second Day	First Day (16-24 hrs.)

Distribution of deaths as predicted by the simulation is not significantly different from the reported incident.

When the actual and simulated data are compared according to number of patients versus hospital bed-time required, a chi-square test is applicable since the samples are independent.¹⁰ The chi-square was applied to the data by injury class and for the total of all casualties. The results of those tests are shown in *Table 3*.

The only significant difference ($P<.05$) between expected (simulation) data and observed data occurs

TABLE 2

MORBIDITY (PATIENT STAY)/MORTALITY BY INJURY CLASS REAL/SIMULATED^{1/2}

2	4 4	4 3*	4 3	4 3	4 3	4 3	4 3	5* 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3
3	22 22	22 22	22 22	22 22	22 22	22 22	22 22	22 21*	21 21	21 21	21 21	20 21	20 21	17 21	17 20	14 20	14 19	14 19	14 19	14 19	14 17	14 14	14 12	8 12			
4	18 18	18 18	18 18	18 18	18 18	18 18	18 18	18 18	18 18	18 18	18 18	15 15	13 13	13 13	12 12	11 11	9 8	9 8	9 7	9 7	9 5	9 5	6 5				
5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	4* 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4
6	5 5	5 5	5 5	5 5	5 5	5 5	5 5	4 5	4 4	4 4	4 4	1 4	1 4	1 4	0 4	0 4	0 3	0 3	0 3	0 3	0 2	0 1					
7	8 8	8 8	8 8	8 8	8 8	8 8	8 8	4 7	2 5	1 5	0 5	0 5	0 5	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 2	0 2			
Total	62 62	62 61	62 61	62 61	62 61	62 61	61 60	55 57	53 55	52 55	46 52	46 50	41 50	36 46	33 45	30 41	30 40	30 39	30 37	30 31	30 31	21 27					
	0	1	2	3	4	8		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15					
	HOURS						DAYS																				
	TIME																										

1/ Figures above diagonal are Real Topeka.
2/ Figures below diagonal are Simulation Results.
* Died.

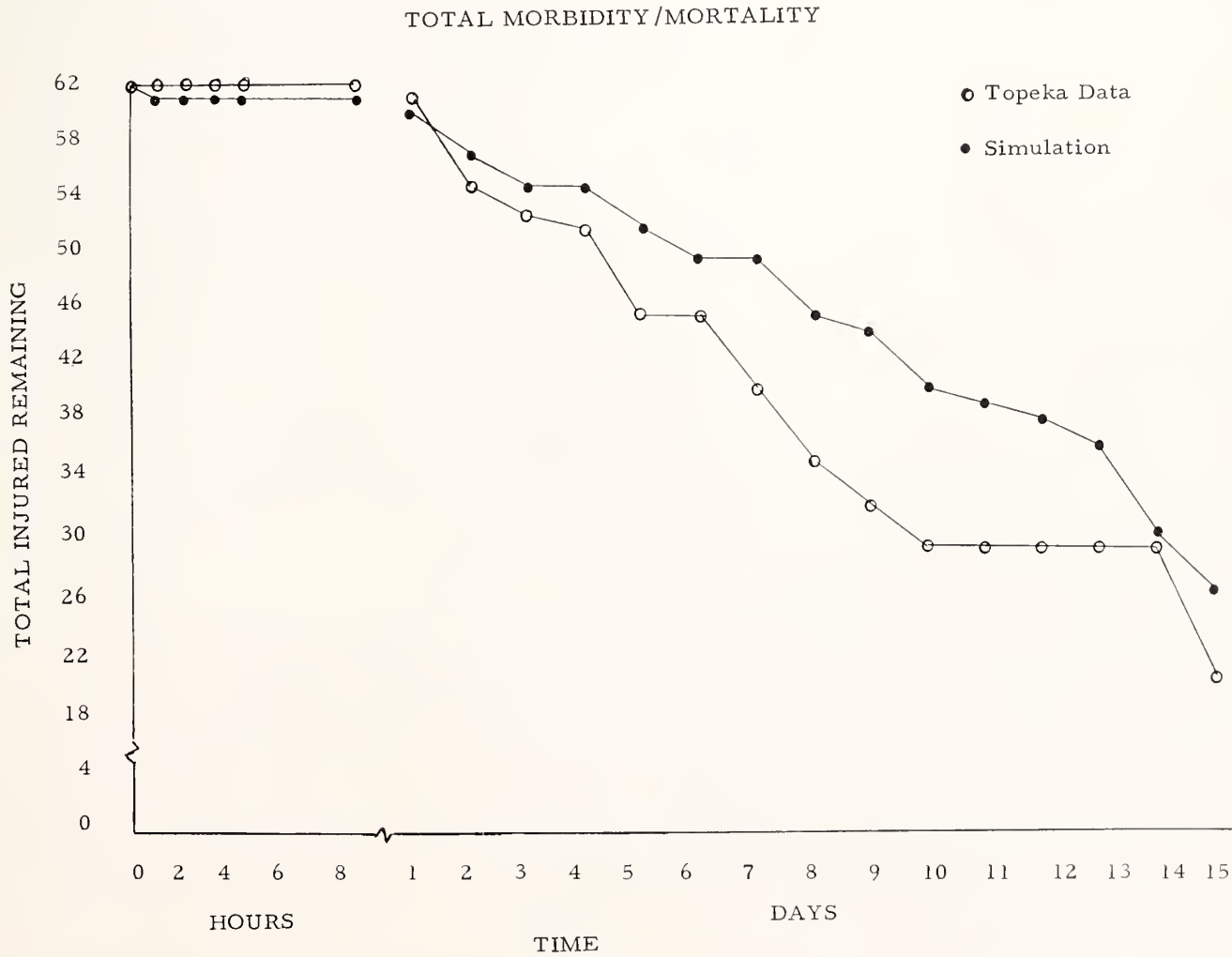


Figure 1

MORBIDITY

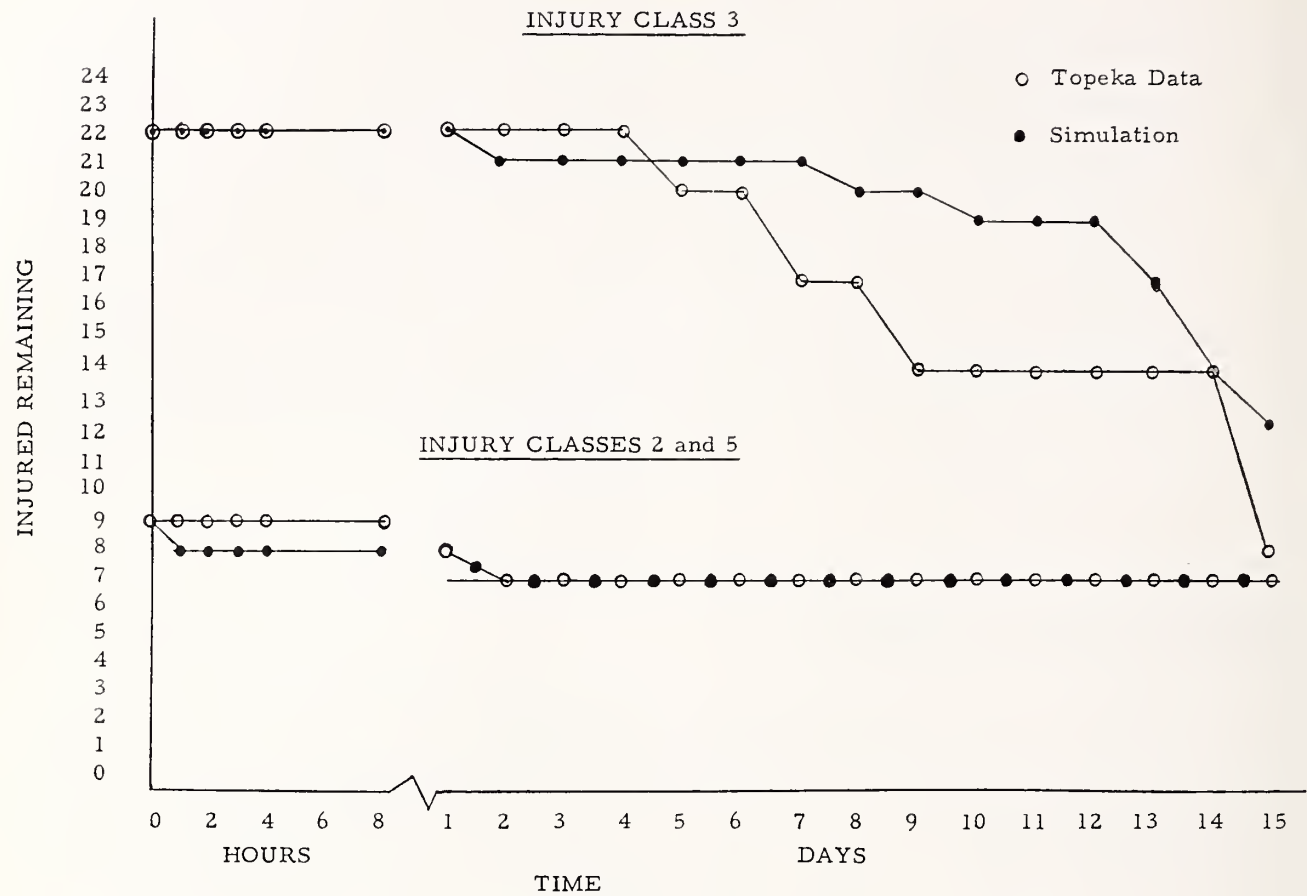


Figure 2

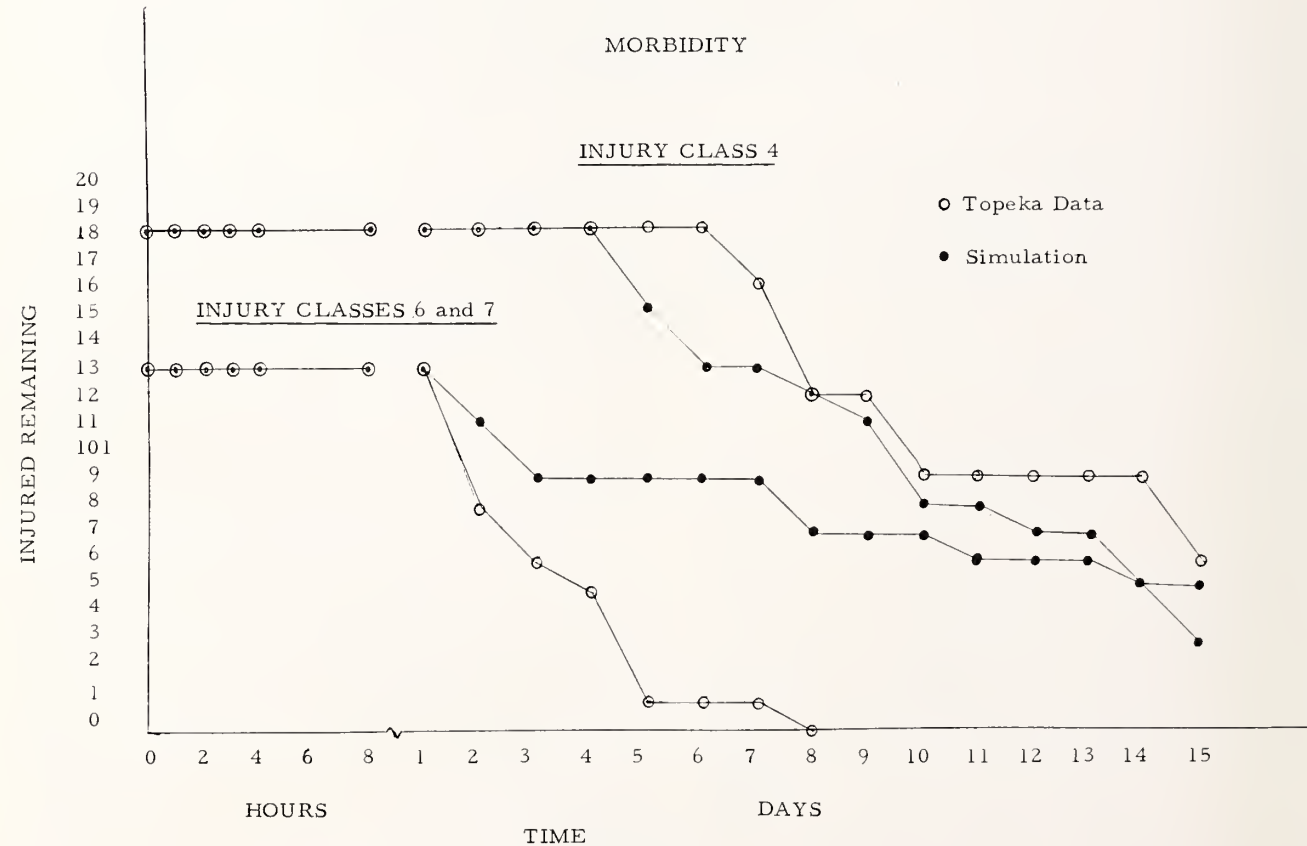


Figure 3

TABLE 3

<i>Injury Class</i>	<i>Chi-Square</i>	<i>Grouping of Samples* By Bed-Day Required</i>
2 and 5†	—	—
3	3.33	≤12, 13 and 14, ≥15
4	1.37	≤7, 8 through 11, ≥12
6 and 7‡	15.2	≤7, ≥8
Total	7.53	≤1, 2 through 5, 6 through 10, 11 through 14, ≥15

* The data cells were combined to satisfy requirements of reference 10, page 161.

† The number of casualties in Classes 2 and 5 combined is too small to apply a chi-Square test; however, examination of Figure 2 shows no significant difference between simulation and actual data.

‡ Classes 6 and 7 were combined to give sufficiently large numbers to apply chi-square test.

in Classes 6 and 7 combined, which are minor injury classifications. However, the value of chi-square for the total of all injury classes is marginal. That is, one does not observe a significant difference between simulated and actual data depending on how the samples are combined. Such a marginal result is not surprising since the total values include results of Injury Classes 6 and 7, which show a significant difference between expected and observed data. Fortunately, the recognizable error is conservatively in favor of the model, which predicts a larger resource requirement than necessary (for minor injuries) to support the real data; were these predictions to be used for requirements planning, an adequate stockage would result.

It must be reemphasized that the total frequencies in each injury class were very low in this tested sample. As a consequence, even very small deviations from real frequencies will produce statistically significant differences.

Conclusion

From the results presented above, we have concluded that the DES reasonably simulated the medical treatment effort of the Topeka disaster. Thus, at least the medical data and treatment model of the DES are partially validated. More complete validation will be obtained when data from other disasters at least as complete as that acquired concerning the Topeka situation are available.

Indications are that medical treatment data necessary for additional validation effort are forthcoming through the auspices of the U. S. Public Health Service from a data collection effort sponsored by that agency. Also a Texas Hospital Association data collection effort now underway and supervised by one of the authors will provide added information. This collection effort involves the West Texas tornadoes of April and May, 1970.

Until such data are acquired we can only offer the opinion that the DES is a valuable planning and training tool. It allows the medical planner and medical care disaster manager to execute and re-execute plans against a simulation of any disaster to assure the plan if and when implemented will offer the casualty the greatest survival potential.

The assumption that no typical disaster casualty spread exists across the scale of injury seriousness, treatment difficulties, or requirements for treatment resources may be challenged or accepted. The validity of the assumption can be tested only with enough proper data from enough real disasters to complete comparative curves. Data collection should be continual and readers are enjoined to assist in the effort if disaster should fall within their province of responsibility.

References

1. Williams, Lewis H. and Richie, William C., Jr., Ph.D.: A disaster environmental simulator, *Simulation* (September, 1969), pp. 121-131.
2. Duce, Leonard A., Ph.D., Moore, William S., M.D., Williams, Lewis H., and Bohn, Gordon A.: *Planning Community Health Resources for Disasters*, Vol. I, Final Report CH 00191 Austin, Texas: Texas Hospital Association, August 31, 1968, pp. 18-32.
3. Moore, William S., M.D.: A new classification system for disaster casualties, *Hospitals*, *J. Am. Hosp. Assn.*, XLI (February 16, 1967), pp. 66-69.
4. Duce, Leonard A., Ph.D., et al.: *Participant's Manual, Planning Community Health Resources for Disaster*, Vol. III, Austin, Texas. Texas Hospital Association, 1968.
5. Disaster medical services, *The Role of Medicine for Emergency Preparedness*, Francis C. Jackson, M.D., and Christopher Earl Kenner, D.D.S., ed. U. S. Department of Health, Education, and Welfare, 1968. pp. 11-12, Public Health Service Publications No. 1071.
6. Two hospitals treat majority of casualties as midwest tornadoes kill 70, injure 1,300, *Hospitals*, *J. Am. Hosp. Assn.*, Vol. 42 (June 16, 1968), pp. 128-129.
7. Jones, Robert R.: Letter to Mr. Gordon A. Bohn dated April 18, 1967. Topeka-Shawnee County Civil Defense.
8. Beelman, Floyd C., M.D.: Disaster planning, *J. Ks. Med. Soc.*, Vol. XLVIII, No. IV, pp. 153-161 (April, 1967).
9. Beelman, Floyd C., M.D.: "Preliminary Report of Tornado Casualties in Topeka," *The Bulletin*, Shawnee County Medical Society, Parts 1, 2, 3, 4, Vol. 28, Nos. 10:7-9; 11:5-6; 12:6-7 (October, November, December, 1966), Vol. 29, No. 1:4-5 (January, 1967).
10. Hoel, Paul G.: *Elementary Statistics*, New York, John Wiley and Sons, Inc., 1960.

Research vs. Social Medicine?

*Demands of Society Upon Medical Research**

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DR. E. J. WALASZEK, PROFESSOR AND CHAIRMAN, DEPARTMENT OF PHARMACOLOGY: I would like to begin by saying that there are a number of demands that society can and does make upon medical research. One may argue that this is a legitimate concern as they pay the expenses of research. In starting this discussion we could probably all agree that informed concern is important, but uninformed or popular concern could be detrimental.

We often see legislatures, lobbyists and sometimes overwhelming public opinion give vent to some feeling and demand a certain goal from medical research. The goals recently proposed, for instance, are a cure for cancer, proper treatment and care of underprivileged individuals, better treatment for victims of stroke, and cure for mental illness. All-out attacks on these problems usually lead to a waste of money and time, only infrequently to the goal. I would like to cite the study by the National Science Foundation in their TRACES report (Technology in Retrospect and Critical Events in Science) as this definitely established the fact that 70 per cent of the key discoveries necessary to development were done by research workers seeking knowledge in their fields without any specific product in mind. Many of us believed this, but, of course, it was never demonstrated, until now, by a thorough analysis. For instance, birth control pills are now the basis of a 200,000,000-dollar industry and these products have vast social and political implications for mankind. This development rests on basic research that goes back many, many years. Always during the early phases of development university research was the major ingredient. Hence, this non-mission oriented research is the most important ingredient in almost all of our technical advances.

I'd like to digress for a moment and speak against those in society who feel that research is interfering with teaching. For instance, in a recent issue of the

AMA News there was an article in which the president of the Illinois Medical Society blasted state medical schools for doing research and not teaching more medical students. We find this feeling in many quarters, even our own. Just as a good guard and good tackle go hand in hand in football, so do good research and good teaching go hand in hand in the medical school. Any other direction is a step into the past. So, I think it has been amply demonstrated that good basic research stems from the universities. If we stifle progress, then it is our duty as teachers to re-educate the public. We have to join the concerned public and help mold proper public opinion. Society may demand quick action, but sometimes it doesn't have the information to establish the correct goals, so it is really our job to help. We must join society rather than stay outside of it. During the past decade, medical research has been very fortunate in that we have a goose that quite often lays a golden egg, and these golden eggs are research advances—birth control pills, the transplantation era which is so dependent on good basic immunologic research, polio vaccine, chemotherapeutic agents, etc. The goose that laid these golden eggs is basic medical research. These golden eggs are indeed precious, so let us remember that we must not let some individual in society kill that goose, because with its passing the golden eggs would no longer be harvested. So, with this as a beginning, I would like to call upon our next discussant.

DR. J. K. FRENKEL, PROFESSOR, DEPARTMENT OF PATHOLOGY AND ONCOLOGY: Our title, "Demands of Society Upon Medical Research," puzzled me, and I was wondering whether it was tongue-in-cheek. Frankly, I have never heard of a riot in favor of medical research, and I feel perhaps there is no popular demand, no *a priori* demand by society for medical research. I believe people want medical care, and the collections that are made for research have a large proportion of medical care mixed in with them. It is very proper that people are interested in better medical care. It is also understand-

* Panel discussion presented at the University of Kansas Medical Center on the occasion of Medical Student Research Day, March 21, 1969.

able that the role of research is difficult to fathom; for the average individual it is a complex thing.

Let us look at the people who are combining appeals for research and patient care, such as for multiple sclerosis, muscular dystrophy, mental retardation, crippled children, birth defects, cancer, leukemia, heart disease and arthritis. These drives are started by citizens who are concerned about these problems; frequently a member of their family or a friend is afflicted with a disease. Realizing that we don't know the answers, they advocate research.

How does one balance research needs with needs for care? Though the taxpayer foots the bill, it is difficult for him to weigh the needs. When the citizen gets involved in decision making, he becomes dependent on scientists, or on professional fund raisers, or on the federal government—all self-interested, and the last two with a high overhead before putting the funds to productive use.

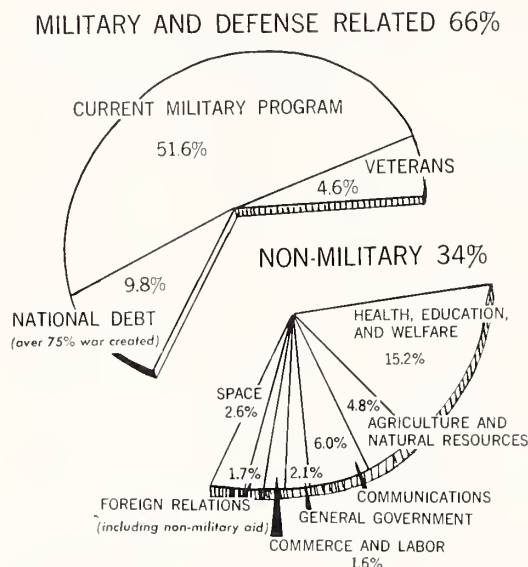
Let's look what demands were made for research in the past. Polio was a good example. People were threatened by polio, and scientists thought they could do something about it. Demands for research funds were spearheaded by researchers and a few farsighted citizens such as Mary Lasker, the god-mother of biomedical research. The selling point was aptly that "a breakthrough was just around the corner."

However, the imminent breakthrough pitch is not really applicable to cancer, mental deficiency, multiple sclerosis, and most other problems that we are faced with today. Now the problems are different. The easily solvable problems have been solved, and basic research as a long pull endeavor competes with current emergencies. We face competition from many sources, and the people allotting funds have a hard time making wise decisions, since research is a speculative investment.

When much of the research funding rests on Congress, many legislators may not be prepared for the cost of the long pull necessary to solve most of our problems. A few legislators, such as Congressman Fogarty and Senator Lester Hill, were sympathetic to the research approach and familiar with the ecology of research progress described by Dr. Walaszek. But they were convinced to start with, or it did not take much convincing.

I would like to present a few figures showing how we spend public money nationally. I would like for you to consider two questions: (1) How much money should be spent on speculative investments, including research? (2) How would you divide up the pie, and what would be your priorities? The national budget is illustrated in *Figure 1*. This is all the money voted for by Congress last year. We see right off that 50 per cent is for current military programs, which together with the national debt and

\$156 BILLION VOTED BY CONGRESS IN 1968*



* The \$156 billion includes all funds appropriated by Congress during calendar 1968, regardless of whether the money was spent in the fiscal year ended June 30, 1968 or allocated to the year ending June 30, 1969. The breakdown (in millions) is as follows:

Supplementals, fiscal 1968 and 1969	\$ 6,821.7
Regular, fiscal 1969	132,806.3
Permanent, fiscal 1969	16,629.6
Total	\$156,257.6

Friends Committee on National Legislation
245 Second Street, N.E., Washington, D.C. 20002

Figure 1. Reprinted with permission from the Friends Committee on National Legislation. *FCNL Newsletter*, December 1968.

veterans affairs, amounts to about 66 per cent, equal to 103 billions, which can be regarded as a solid block. The next large block represents health, education and welfare, with 15 per cent or 23 billions. Most of this consists of programs which have little to do with research. To approximate the research fraction of the 23 billions for health, education and welfare, we can focus on the NIH portion of the Public Health Service appropriations, or 2.3 billions. This is about one tenth of the HEW budget, or 1.5 per cent of the national budget. In addition, we readily see how relatively little we spend on agriculture, communications, general government, commerce and labor, and foreign relations, including non-military aid, although 2.6 per cent goes for the space program alone.

Following Sutton's law, or "where the money is," we have to look at the military portion of this pie. If we need money for speculative research investments, for human needs, we need to compare them with speculative investments for defense. Where does safety lie, what "mix" will buy us greatest safety, and what are the priorities?

Table 1 gives us breakdown of all U. S. Research and Development expenditures from 1960 to 1968. It shows first the percentage that was spent on research by the Department of Defense, NASA and

TABLE 1
U. S. RESEARCH AND DEVELOPMENT

	1960-68		1967—Billions	
	BILL	%	TOTAL	MEDICAL
Dept. Defense	58.3	50	7.9	.125
NASA	33.8	30	5.1	.080
AEC	11.9	10	1.6	.105
HEW	7.1	6	1.3	1.189
NSF	1.8	1	.33	.017
Commerce, Interior, <i>et al.</i>	5.4	5		
	115	102	17.5	1.5

AEC, together accounting for 90 per cent of all research. The Department of Health, Education and Welfare received only 6 per cent of the total, all for biomedical research; and the small remainder went to others. Second, we see for 1967 that total research expenditures were 17.5 billion dollars, and the amount going towards medical research 1.5 billion dollars.

Figure 2 provides a breakdown of how much money goes into different biomedical disciplines. The amounts indicated are in terms of public health service research, training, and fellowship awards. Mental health (not shown) receives the largest

share of 170 million, followed in descending order by general medical research, heart disease, arthritis and metabolic disease, health facilities and resources, neurologic disease, cancer, allergy and infectious disease, children's diseases, dental diseases, environmental health and international projects. This is an overall view.

How are the needs determined? I have not been able to uncover any national planning for this. The best that I could find out is that the bureau chiefs try to get as much money as they can, based on past budgets and increased needs that can be justified and are acceptable. Certain overall budget limits are determined by the President, the Bureau of the Budget, and Congress. The lack of planning for constructive national goals is surely worse than in the area of national security, generally considered to consist largely of military defense. Even there, Bill Sanders, formerly with the *Kansas City Star*, was led to comment about the defense appropriations and the hit or miss defense contract machinery, where dollars are fed in, and a product emerges, but John Q. Public is not in on the planning (Figure 3).

I think we have a similar problem in research. The taxpayer may know what goes into the research machinery; he doesn't understand much of what goes on inside, and little about what comes out. It is up to us to explain it. As scientists and educators, it is up to us to take a long range view of national priorities, and of all of the monies that the government spends. What is the meaning of, and what re-

CHART 3. NIH RESEARCH, TRAINING AND FELLOWSHIP AWARDS, BY INSTITUTE OR DIVISION
FISCAL YEAR 1967

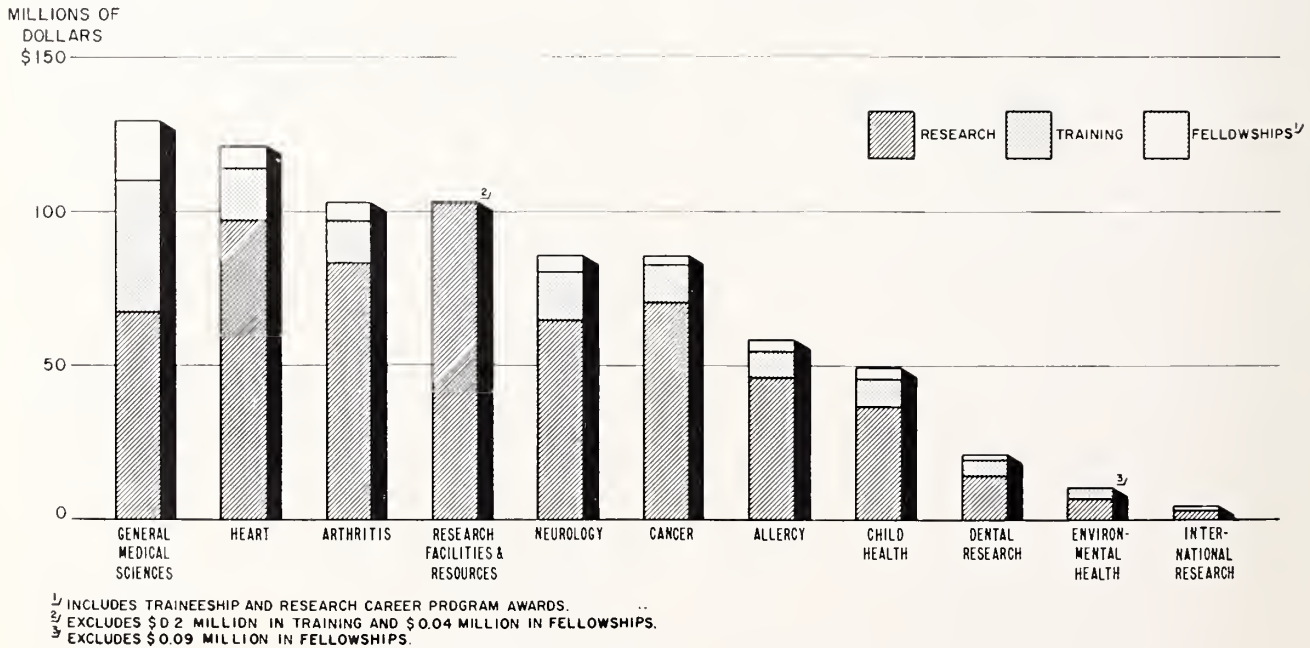


Figure 2



Sanders in The Milwaukee Journal

"How should I know what goes on in there? I've never looked inside the thing."

Figure 3. Reprinted with permission from the Milwaukee Journal.

turn can be expected from speculation in military defense, consuming 50-60 per cent of the budget, and from speculation in medical research on which we spend only 1 per cent?

For guidelines we might consider some of President Eisenhower's thoughts. In his farewell to office speech he said, "In the councils of government we must guard against acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex. The potential for the disastrous rise of misplaced power exists and will persist." He continues, "Yet in holding scientific research and discovery in respect, as we should, we must also be alert to the equal and opposite danger that public policy could become captive of a scientific-technologic elite." To avoid these twin dangers, he admonished us that "Disarmament with mutual honor and confidence, is a continuing imperative. Together we must learn how to compose differences, not with arms, but with intellect and decent purpose."

The last years have made clear that national priorities in terms of health and human welfare must be balanced against military requirements. The logic of destructive arms, and the spiralling arms race receives too little scrutiny by the taxpayer. It is not as complex as medical research. Many who have analyzed national purpose and national securi-

ty have come to conclude that the high cost of military investments undermines national security by thwarting the needs of those within the system. Indeed, I feel the trend to apply military solutions to political problems abroad, as in Vietnam, impairs the strength of the system at home.

In conclusion, then, whenever we consider one set of human needs, we must consider all the needs competing for the same public funds. Another cartoon by Bill Sanders contrasts the technical achievements of the space program with human hunger (Figure 4). This symbolizes different value judgments made, although conflicts of private and public interests also are involved.

Before we spend the nation's wealth we need to reflect on national purpose and priorities. I think we have to do this consciously, logically and constructively, not emotionally, nor driven by unreasoned fear. As educators and scientists, we ought to be in the forefront, spearheading this discussion. If we don't, the money for basic research, the goose that lays the golden eggs, will be siphoned off for crash programs and spectacles, and to assuage vague fears.

MR. ARTHUR DOUVILLE, JUNIOR MEDICAL STUDENT, UNIVERSITY OF KANSAS: In considering "the demands society makes on medical research," I feel the primary issue to be, really, the relationship of

"Isn't It Wonderful the Way We Can Get Those Things Together Way Out There in Space?"



Figure 4. Reprinted with permission from the Milwaukee Journal.

all scientific research, of which medical research is but a part, to society. In doing so, I think that I should have to make several contentions. First, I should have to say that the kind of relationship which exists between scientific research and other elements of society has historical roots which may be examined critically. I feel the importance of this examination lies principally in the fact that the so-called independence of science from the political, social and economic milieu is shown to be largely a myth. I think also that were it not a myth it would be necessary to change that relationship of so-called independence. I should have to argue that the belief in the myth, especially in the area of the life sciences, will possibly have very dangerous consequences for society.

Now, what we need is a redefinition of the relationship between society and scientific research. Let me explore briefly some of the myths of that relationship, as well as explode them as the absolutes which they are commonly held to be. First, the myth that a free exchange of ideas in a free society is necessary for the progress of science. No one who is aware of the technological superiority of Nazi armaments at the end of the second war in Europe in 1945, and certainly no one who realizes the dangerous potential of Chinese scientific power in terms of intercontinental ballistic missiles, and their development of atomic weapons, can argue that democracy and "freedom" are criteria for scientific progress. Scientific research was, in Nazi hands, turned to evil purposes, including the development of the most efficient means to dispose of large numbers of innocent people in the so-called "Final Solution." Research of this kind goes on in many "civilized" countries of the world, including the United States. Secret research in chemical and biological warfare goes on under the auspices of our best universities. The Army makes "a mistake" and 6,000 sheep in Utah die of nerve gas poisoning—six weeks later these careless defenders of freedom are shipping their lethal substances across the populous parts of the country to dump them in the ocean. Medical schools, as the University of Pennsylvania's famous "Spick Rack Incident" demonstrated, have been involved as well as the military, and the chemistry and biology departments of major universities. The secrecy of these projects has not hampered their progress in producing specific agents for the destruction of human life, and too often the perpetrators of this kind of research are medical scientists, individuals whose training has supposedly inculcated in them a reverence for life and a dedication toward its preservation. But if one would claim that these facets of scientific and medical research represented the evil uses of science in the perversion of medical tradition, a critical response might utilize the myth that science is amoral, that it is concerned only with

the advancement of knowledge. The roots of this belief, which I say is a false belief, go back to the Judeo-Christian concept of nature and the ontological dualism which has pervaded Western thought since then.

Once, the sacred suffused every facet of man's existence—the trees, the house, the very air, and, above all, man himself. Spirit and flesh, as the same kind of substance, participated in the sacred nature of existence, the existence of all things. If these elements of a man's life were not God, they were at least inhabited or had to do with gods and spirits, and thus were related to the moral forces which operated in the intercourse of being—personalities—human or divine.

I recall this earlier age of man not as a nostalgic ideal to be sought again, but to recall that once this distinction of mind and matter, spirit and flesh, did not exist as the kind of condition of thought which it is for most people in the modern era.

The concept that the world was divided into matter and mind, worldly flesh and heavenly spirits, had profound consequences for the social development of science, for in trading the black magical cloaks of the medieval alchemists for the white smocks of the mid-nineteenth century new man of science, the scientist, like Goethe's Faust, made a deal with the arbitors of the spiritual domain. "Render unto Caesar that which is Caesar's and that unto God which is God's" was the paradigm for an agreement settled sometime between the trial of Galileo and the publication of Francis Bacon's *New Atlantis* which held that matters of matter and the flesh belonged to the scientist, and the matters of the spirit were the perlieu of the divine order and its magisters, the priests. Indeed, to prove the essentiality and the workability of this new orthodoxy, that of the separation of mind and matter (in practical terms the separation of religion and science), scientists like Descartes spent huge amounts of energy proving the existence of God, then eliminating any of His moral relevance to their sphere of expertise which essentially was the study and manipulation of matter. With separation of the "moral" and "scientific" universes into two separate estates, as it were, scientists had not only a right to dissociate themselves from the tradition which led to what we call now the humanities, they had virtually a duty to do so. The tradition of the West which separates mind from matter, spirit from flesh, leads through its philosophic, scientific expression in the Cartesian dualism, to the separation of science and humanities in what the British scientist C. P. Snow has called the schism between "two cultures," that of letters and that of science. The schism is maintained, in the words of Ortega y Gusset, by a certain "barbarism of specialization." "By the 19th century," he points out, ". . . we meet with a scientist unparalleled in history,

(who) even proclaims it a virtue that he takes no cognizance of what lies outside the narrow territory specially cultivated by himself, and gives the name 'dilettantism' to any curiosity for the general scheme of knowledge." Only a few scientists, Einstein, Oppenheimer, Mach, to name the more notable, have paused to become "dilettants," to reflect on the effects of their work on the rest of mankind.

It took only a few thousand scientists, engineers, and technicians working in a secret project under the football stadium at the University of Chicago in the 40's to usher in the atomic age with the concomitant and profound revolution which it has created in our existence, or, I must add, our possible non-existence. Society, it would seem, demanded the creation of the atom bomb, and the scientists dutifully produced it.

Now, as proclaimed by *Life* magazine and other mass media, we are on the threshold of a biological revolution, the "Control of Life." The life sciences are in a stage of rapid theoretical and technological evolution, the end of which is likely the effective manipulation of genetic material and the control, perhaps through drugs, electronic devices, or operant conditioning of mental processes. In view of these possibilities, how can we, as life scientists, dissociate ourselves from the consequences of our work and study? How can we ratify the need of human society to life in an environment free of industrial poisons and human overpopulation yet deal adequately with the proclivity of human political institutions to seduce some among us to turn our knowledge to the pestilences and poisons of war and threats of war, to the diminution of human freedom and potential? Surely it is these non-quantitative values which are the end of our art as medical scientists.

What are some possible solutions to the dangers presented to us by this revolution in the life sciences? Some have suggested the recreation of the older ideal of "profession," which contains within it the idea that special skills not only entitle one to special status, but also demand a special sense of responsibility to the welfare of other men. This ideal has, of course, never existed for the physical sciences, and, if indeed it ever existed in medicine, it is rapidly vanishing under the weight of materialistic co-optation and the "barbaric specialization" which I mentioned earlier. It is, then, almost certainly too late to hope that a revived professional ideal of responsible service to the needs of man can save us from the potentially evil effects of the coming biological revolution.

Perhaps one difficulty in debunking the mythology about the need of science for freedom and the necessity of its dissociation from judgments of value lies in the fact that it is uncommon for us to make a distinction between so-called "pure" investigational

research, and what some writers, including Harvey Wheeler of the Center for the Study of Democratic Institutions, have called "developmental science." It is hard in many ways to separate the two, but by example I would term Einstein's basic work with the phototube and his development of Minkowski's mass-energy equations "pure," investigational science, and the steps leading from them to the television set and the atomic bomb "developmental science." In biology, Watson and Crick deduce the structure of DNA, a purely investigational inquiry into the nature of genetic material, and the recent work of Kornberg and others in synthesizing "artificial" DNA lies along a direct line leading to the manipulation of human heredity, what I would, after Mr. Wheeler, call developmental science. Some have suggested that what I have termed "developmental science" be brought under the control of a legislative body in which is represented statesmen, scientists, and experts in the humanities such as philosophy, literature, and law, to name a few. Such a legislature would control funds allocated for developmental science in such a way that non-technologists and non-politicians would have greater control over the direction of developmental science.

Over the long run, however, it is the scientist, and in this new age the biological scientist, who must re-examine his commitment to simple careerist values and the delusion that his scientific work is totally dissociated from the "demands of society,"—too often demands for better instruments of destruction. Think, for example, of the force scientists could wield for the good of man if they would refuse, as a group, to participate in research on projects directed toward destruction and mass murder, or refuse to train anyone whom an interprofessional admissions group judged would agree to work in such projects.

But this last hope is perhaps, at best, only idealistic dreaming, possibly a little dangerous in suggesting essentially political and ideological controls on the "progress of science." Despite the fact that the major directions of scientific ("science" again in the developmental sense) progress in this country are subject to the political and ideological means and ends of such groups as the Lasker forces and the military, the illusions of freedom cherished by the academic community is well established.

Yet, the legislation of the direction of scientific advances by the interprofessional group suggested above would meet with strong opposition from the military-industrial complex, which would see its hegemony in the developmental sciences threatened, and the disapproval of the scientists themselves, who would fear the loss of freedoms which they do not really possess.

Perhaps it would not be too much to ask only that the educational process which produces scientists,

engineers, and physicians expose them adequately to a broader view of the life of man, to assuage the bitter fruits of the barbarism of specialization and give the scientist the capacity for and the interest in (perhaps I should add the commitment to) dialogue with other citizens. Only then will the demands of society on scientific research be consonant with the development of a better life for man and a deeper understanding of the world around him.

DR. LAWRENCE SULLIVAN, PROFESSOR, DEPARTMENT OF PHYSIOLOGY: Scientists in this country have been troubled recently by the changes in amount and funding of research. We are just beginning to realize that the honeymoon is over. The faith of the public and Congress in the ultimate power of science to benefit mankind is obviously beginning to waver.

The current attitude in our government has been expressed by an assistant director of the Bureau of the Budget in an editorial in *Science*. "Is it right to underfund programs in education, environmental health and model cities so that we can seize opportunities in science and technology? Should we require that the public investments in research and development meet some reasonable test of social return? I am one who thinks they should."¹ However, he does not say what a reasonable test of social return is or how one can be decided upon.

Congressman Daddario, chairman of the House Subcommittee on Science, Research and Development has stated the problem and the method of solving it very bluntly. "Science is obviously affected by funding, funding is dependent on public policy, so science must affect public policy. The paradox is that science is characteristically aloof from politicking, feeling that the scientific method requires it to ignore the exigencies of politics, but times have changed."²

Obviously the public has a right to say how its money is to be spent. If the science establishment wants part of that money, then it must convince the public that it will benefit from giving it to us. In this day and age we are obviously not going to convince the public by uttering shop-worn phrases about the holy power of science and the absolute benefit of new knowledge to mankind. If we believe in what we are doing, if we are sure that non-mission-oriented research is valuable, then we must convince the public of that, and we can only do that by educating the public. We must promote a widespread discussion of the issues and educate the public on the real values and needs of basic science.

Our society needs and deserves our participation, not only to help them in the development of a wise science policy for the country, but to help in solving all of its problems. I don't believe that scientists

have any special talents or answers for our pressing social problems, but we are a supposedly intelligent and well informed group of citizens that can and should help. A good place to begin is in seeking to elect well-informed and intelligent people to public office. The day is fast approaching when we can no longer afford to have representing us the type of legislator such as the one that wants to sic the House Un-American Activities Committee on proponents of sex education in our public schools.

One place that we can begin to educate the public on the real values and needs of basic sciences is right here with our own students. The largest single potential source of the people who could have an intelligent appreciation for the worth of basic science research are medical students. It is their scientific specialty that has the greatest contact with the public and the greatest potential ability to help the public establish a wise science policy. We, the faculty, must realize that we cannot turn out just medical practitioners who know only how to treat patients, we must also produce graduates who have an appreciation of the worth of knowing the why, and the need to continue to investigate the why. As Dr. Walaszek so very ably put it last year at this time, "This must be a 'why' school, not just a 'how' school."

If we want the public to be intelligent and responsible in the matters of science, then we must educate our students to be intelligent and reasonable members of the scientific community, able to participate and assist the public in the development of our science policy.

DR. CHARLES LEWIS, PROFESSOR AND CHAIRMAN, DEPARTMENT OF PREVENTIVE MEDICINE: I think it is a marvelous contrast that on a day when we are obsessed with quantification and precision, we have chosen a topic for a panel discussion that has all sorts of vague words like "society," "demands," and "medical research." These are some of the abstract terms that I am used to living with, but I suspect they are very foreign to some of you.

I would like to suggest that instead of speculating about this, we design a proposal to answer the question proposed. I would humbly propose that we go out on the streets and select at random members of society (according to certain variables, a stratified subsample) and pose questions to them. Not the way we take histories, "you don't have a headache, do you; don't have back pain, do you." I would begin with a hypothesis, since we all know that good experimentation begins with a hypothesis. I won't state it in its full form, but let me just say that I would assume that expectations of society on medical researchers is a linear function of their social class.

As we talk to those 30 per cent of our impoverished citizens that others are concerned about, and we ask them what they think, I suspect they would stand there and look at us and say, "whatever you want, boss, whatever you want." I suspect, as we get into the middle-class group, we might find that people will tell us they want the disease problem that killed grandpa or grandma, or whatever their kids suffer from, solved. And, as we look for the upper-middle class, we will find people who espouse the causes which they represent on boards of several hundred voluntary agencies. It is tough to be a traitor to your own cause, and we will find them devoted to whatever cause they happen to be the president of this year. I would suspect that if we could find any upper-class members of our society (and since no one will admit to being one anymore, we might have difficulty), we probably would have them tell us that your experiment is a bust, because demands are created by promotional programs using mass media and very clever people, and only secondarily by the experience of individuals.

In order to express demands they must go through a political machine. In the process of generating research programs, we have developed what has been referred to as the problems of instant medicine. We have promised to congressmen suffering from transient ischemia, relief from stroke; and to ladies who are very influential and who feel their breasts every morning, relief from breast cancer. When we promise something fairly realistic that we can do—fine, but when we promise something and there is a lot of money invested, and no yield, we have created a generation of disbelievers.

Let me go ahead and say what I think the future holds as far as society and medical research in general are concerned. I think consumers will play an important role. Consumer is an important word right now. I must admit that as I have wandered around the country I have met some bright blacks who never got out of high school, but if they had been born white would probably be university professors, if that is any measure of criteria for success. As soon as these gentlemen learn how we play the game, they will be very influential in budgeting for health; they have been a very effective organizing force in their own societies. The second group that I think is fascinating, and I am convinced that they are going to be the voices heard in the wilderness, are economists. Dr. Frenkel has mentioned, and others have talked about the issues of investment and return.

One of the problems of applying economics to an analysis of medical research is that research carries with it a doubt of uncertainty, or a probability function. The best guide to the future success of any experimenter is his past success, and we need more in-

formation on the past research yields of all investigators. April is study section time at the NIH. I get depressed when I realize that most of us look at all sorts of propositions, and think if I know them (the researchers) they are good, and if I don't know them they are highly doubtful. I believe that most of us consider the issue of the personal probability of success. However, the mechanism that has been set up to fund medical research unfortunately lacks any sort of evaluation or feedback mechanism, so that we continue to operate with an excellent mechanism which unfortunately may be 180° off course.

I would, in sort of summarizing, like to reiterate what has been said by Dr. Walaszek. The major breakthroughs come through basic research, and we need to continue to support this. Perhaps the challenge of the 1970's will be that as consumers become involved, we will have to defend basic science research against transfers of funds for the delivery of health care. One of the things we need to be concerned about, as we apply the techniques of economics, is the fact that a small increase in the probability of success in an experiment applied to a large problem is not necessarily proportional to the cost of researching that problem. For example, we can calculate with adjusted life tables what would happen if we removed all causes of death due to heart disease. You get 12 more years for your money. The interesting consequence is that only eight tenths of one of those years comes in a productive period of life and the rest would create a drag on society by increasing the numbers of us being wheeled around. Sooner or later one must ask the issue of investment-returns in terms of the quantity and the quality of life which results.

I am sure that as we face a future with limited resources and competing claims that we are going to be destroying a lot of myths about the apolitical, then I believe our society is lost.

DR. I. S. EDELMAN, SAMUEL NEIDER RESEARCH PROFESSOR OF MEDICINE, UNIVERSITY OF CALIFORNIA, SAN FRANCISCO: First, let me say how happy I am as a visitor to be here at the University of Kansas and how impressed I am both at the interest in the Student Research Program and of the interest in fundamental social questions that have been displayed at this Center. I consented to speak on this topic because, like many other working scientists, I have strong feelings about the matter, and I believe that some of the previous speakers have presented what I consider to be misconceptions.

Science is a social activity; it is an activity which is carried out by groups of human beings. It is not carried out by other animals, and it is not carried out by inanimate objects. On the other hand, science and technology are not synonymous. Science is charac-

terized by a search for understanding. Its fundamental goal is to attempt to develop insight into natural processes. Its function is not to produce atomic bombs, space vehicles, flame photometers or any other object, no matter how useful or how reprehensible its function may be. The distinction between science and technology is very important, because the moral issues that have been raised here concern the technological products of science rather than science itself. Science is characterized by an ethical system which has been neglected in these discussions. For example, it's one of the few areas of human activity in which there is an acceptance of the concept of objective truth over and above institutions or personalities. It is nondiscriminatory, in that acceptance of an idea depends on evidence and logic rather than the social status of the enunciator of the idea. Any man who speaks the truth, no matter who he is or what he is, has as much claim to attention in science as any other man. Its fundamental value system is the system of merit, and it is the only system that I know of in which there is an implicitly agreed upon concept of mutual responsibility on the part of its practitioners without a written constitution, set of laws or any other set of written rules.

Unfortunately, "science" is often confused with what scientists do. Scientists eat and sleep, they go shopping, they play tennis, they complain, occasionally they may mistreat their wives, they go into business or they do applied research. Scientists do many things other than science, but science does not include everything that scientists do; and so I would say first, that to the extent that individual scientists participate in activities which lack what we would regard as an appropriate moral base it reflects on the man, but should not be considered a failing of science.

The value of science to society raises another set of questions. The title of this panel discussion "The Demands of Society Upon Medical Research," lends itself to more than one interpretation since medical research is a complex which includes both technology, that is the search for technical advances, and science, a search for understanding. And the confusion between these two searches leads to confusion in trying to analyze what should be supported.

To concentrate on the question of the role of science in society, I would revise the title to ask "What is the value of science to society?" The value falls into two classes, one of which has already been illustrated: vaccines, antibiotics, heart transplants, etc. These technical contributions, however, often derive from scientific inquiry rather than as inventions. For example, in the early 1900's Dr. Einstein

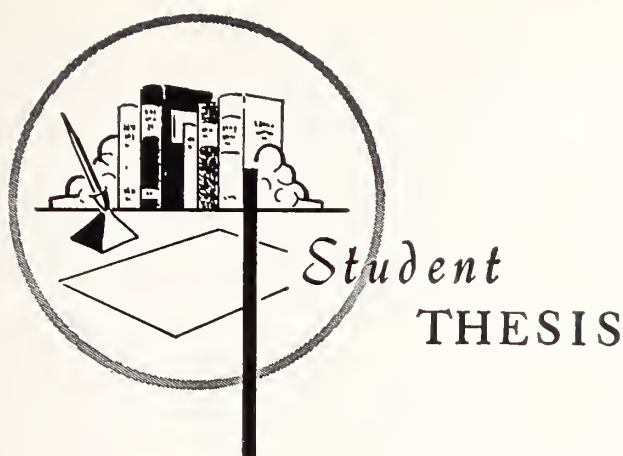
described the photoelectric effect which provided the basis for the flame photometer, an instrument doctors use every day in doing sodium and potassium analyses to further the care of patients with a variety of illnesses. I am sure all of us think it was a good thing that Dr. Einstein sat around worrying about the quantum nature of light without giving a thought to the question of whether someday his work would be useful in managing medical problems. The level of understanding that he achieved ultimately had practical value through engineering applications. It is also obvious that technical or engineering advances have extended man's ability to use scientific knowledge for non-productive and destructive purposes.

There is, however, a contribution of science and, in particular, biological science to medicine which is often overlooked, which I would particularly like to emphasize in this discussion, namely the intrinsic value of scientific discovery. I mean by that, advances in our understanding of biological systems. Independent of any tangible products and machines, one of the important values of science to medicine is in providing an understanding of how biological systems work. When Professor Pauling described the alpha helix, it immediately had value in medicine with no further translation into any other product or material item. The same may be said for the elaboration of the concepts of the dependence of RNA synthesis on DNA and the dependence of protein synthesis on RNA. Present-day physicians have been aided in making judgments which are better and clearer and wiser because the biological sciences provided us with more insights into fundamental mechanisms.

From the standpoint of the practical questions of funding: If science is juxtaposed in its value to society with other desirable activities such as rebuilding our cities or improving medical care in the ghettos, we put into competition activities which are complementary and equally desirable. Both science and social progress should claim our highest priority. If we say that science should be neglected in order to bend all our efforts to solving social problems we threaten our medical heritage. The possibility of proving an enriched intellectual heritage in medicine should not be restricted because there are valid needs in the area of community health, or in the area of education, which also deserve support. In the long-run, man's health and well-being will surely depend on science and scientific research.

References

1. Carey, W. D.: The need for priorities. *Science* 163: 3862, 1969.
2. Daddario, E. Q.: Academic science and the federal government. *Science* 162:1249, 1968.



Methods of Evaluating Fetal Distress

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IN THE PRACTICE of modern medicine many parameters are used to evaluate a clinical situation while arriving at a specific mode of therapy. The physician correlates his diagnostic impression with information gathered in laboratory and clinical examinations. Knowing precisely what laboratory values to rely on in assisting one's final decision and plan of treatment requires procedures that are specific for the problem.

The obstetrician is faced with management of pregnancies where the welfare of the fetus is jeopardized, where he must make a judgment as to the fetal status and whether the pregnancy should be interrupted in order to have a viable infant. The internist has a battery of liver function studies which he can use to establish his diagnosis and proposed management; likewise, in evaluation of cardiac embarrassment several parameters—particularly the transaminase enzymes and lactic dehydrogenase isoenzymes—are invaluable in arriving at the final diagnosis. To determine the extent of apparent fetal distress the obstetrician has a number of laboratory values to monitor, all related to function of the fetoplacental unit, but, unfortunately, specifically which value to rely upon is not yet known.

In this paper the discussion will be based on the fetoplacental unit as an active metabolic structure, composed of two interacting parts—the fetus and the placenta—within the influencing maternal environment. An attempt will be made to point out

some of the laboratory studies reflecting activity of this unit which can be used in evaluating fetal distress.

The placenta is a unique organ, acting as the link between the maternal environment and the developing fetus. Serving a dual role, the placenta acts as a transport organ, both to and from the fetus, and also as a dynamic metabolic organ, functioning as the fetal liver until the 10 to 12th week of gestation and as an endocrine organ until term. In order to maintain these capacities the placenta is "endowed" with enzymes which are: (a) necessary for the basic "living" placenta, (b) required in catalyzing transport reactions between maternal and fetal serum, and (c) an integral part of intermediary metabolism and specialized activities in protein and steroid hormone synthesis. With access to these enzymes and also to the metabolic products from the placenta via the maternal circulation, a multitude of possibilities are present by which one could judge the status of the fetoplacental unit.

The interaction of the fetus with the placenta is most important, for the development of the fetus produces significant alteration in the function of the placenta with respect to the "by-products" that are found in the mother's blood. The fetal adrenal gives rise to precursors that are altered by the placenta in steroid metabolism and detected in the maternal circulation: the most notable of these is the conversion of 16-hydroxy-dehydroepiandrosterone sulfate to estriol. Variation of serum alkaline phosphatase levels in the mother with fetal skeleton growth is an example of a placental-derived enzyme that is related to intrauterine development. These are just two of several possibilities that may be used by the obstetrician in his evaluation. A more specific discussion follows.

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Kadyk has completed his internship and is now stationed as a general medical officer at the Naval Air Facility, FPO Seattle 98770.

Alkaline phosphatase found in pregnancy is not of fetal origin, since it is absent from cord serum while being present in maternal serum. The elevation which occurs is not related to maternal disease and corresponds generally to calcification of the fetal skeleton at 15 weeks gestation, with the increasing values related to calcium mobilization from maternal bone to provide for the growing fetus. The function of this enzyme in the placenta is that of transference. Total values of alkaline phosphatase activity range from 2.2 Bodansky units (B.U.) in early pregnancy to 20+ B.U. at term, with the *heat stable* portion of this enzyme being the major contributor to the increase. Another study showed normal range, after 34 weeks gestation, to be 4.0-25 King-Armstrong units. Regardless of the units of measurement, a correlation was noted in which fetal complication or immaturity was increased when repeated alkaline phosphatase levels were below specific values. In the study by Levine the critical value was 3.0 B.U. With determinations of this enzyme one has a value which provides some measure of fetal maturity.

Weingold and Southren have investigated diamine oxidase (DAO), a placental enzyme that develops in response to a fetal product. First demonstrated in the placenta in 1937 by Danforth and Gorham, DAO is formed by the decidua and can be viewed as a maternal adaptive enzyme in response to a specific amine—most probably histamine—produced by the fetus. "Histamine, important in the metabolism of all rapidly growing tissue, is known to be present in high concentration in fetal tissue. . . . [This] contrasts sharply with the absence of histamine in maternal plasma." Weingold noted a correlation of abnormal values of this enzyme in such conditions as missed abortion, habitual abortion, and incompetent os syndrome, and stated that the DAO assay was uniquely applicable as a prognostic sign during the first and second trimester, since it shows progressive increases in activity from approximately six weeks gestation.

Still further work has been done with other enzymes found in the maternal circulation and known to be present in placental tissue. Meade and Rosalki determined the range of activity encountered in pregnancy and cord blood of seven enzymes in common diagnostic use and arrived at a classification of maternal enzymes. Pseudocholinesterase had an activity that was unchanged through pregnancy and labor, and was called a Class I enzyme. Class II enzymes were those showing a gradual increase throughout pregnancy, and the only enzyme studied in this category was alkaline phosphatase. Class III encompassed those which had significant increase in activity only during labor: these were SGOT

(glutamate oxaloacetate transaminase), SGPT (glutamate pyruvate transaminase), ICD (isocitrate dehydrogenase), LDH (lactate dehydrogenase), and SHBD (α -hydroxybutyrate dehydrogenase).

More specific investigation of LDH suggests that the elevation in pregnancy may be associated with acute placental disease in which placental separation is involved (similar to that at term delivery); and ". . . the LDH alterations usually occur within six to ten hours after the onset of symptoms." Pulkkinen and Willman worked with LDH isoenzymes and found the relative content of LDH₄ isoenzyme to be higher during pregnancy, suggesting that this might be secondary to placental release. However, no specific studies were done to correlate this isoenzyme with abnormal situations of gestation.

Alkaline phosphatase levels during pregnancy indicate the response of the placenta to demand by the fetal skeleton. The DAO levels are also related to a specific interaction between the mother and the fetus. Both enzymes are relatively dependent on the integrity of the two entities in the fetal unit, and are not specific for failure of the individual part. Tests which show either placental failure or fetal difficulty, without regard to the other, are needed. LDH reflects an acute failure or separation of the placenta, but does not fill the role of detecting more gradual changes.

Oxytocinase is an enzyme found exclusively in pregnancy that originates, most likely, in the syncytiotrophoblast of the placenta. Babuna and Yenen studied levels of this enzyme in 197 patients and found that in 180 normal pregnancies a significant increase occurred at the 16th week, followed by a steady progression to peak values at term, with no variation with respect to age, body weight of the mother, or fetal weight. In three cases of toxemia ending with fetal death, a steady decrease in values was noted; but in two of three preeclampsics with live births, the oxytocinase level increased steadily until five days after intervention when there was a sudden decline, presumably secondary to placental separation. In severe preeclampsia/toxemia, all the small villi of the placenta are affected, with syncytial degeneration observed. The results of these and other studies indicate that oxytocinase is an enzyme specific for placental function, since the placenta is primarily involved in preeclampsia with the decrease in fetal growth a secondary phenomenon. With such an indicator the obstetrician could substantiate suspected *placental* dysfunction, particularly in cases of moderate-severe preeclampsia, postmaturity, or cessation of fetal growth.

The hormone human placental lactogen (HPL) has been studied as an indicator of placental integrity. HPL is observed in the maternal serum as early

as six weeks gestation, rising steadily to a plateau after 34 weeks and disappearing rapidly from the blood after delivery. In some patients with "placental insufficiency syndrome" HPL failed to rise to normal levels after 28 weeks gestation, but a low HPL level was not necessarily incompatible with fetal survival, provided it remained constant. As with oxytocinase, this placental product is not widely utilized as a parameter of fetal distress and, at present, is still in the investigative stages.

The placenta's role as an endocrine organ is extremely important. Chorionic gonadotropin, progesterone, and estrogen are vital in the physiology of pregnancy; and the measurement of the changes which occur in the production, metabolism, and excretion of these hormones can be used to assess the status of the pregnancy. Some of the tests are specific for placental condition alone, as with oxytocinase, and others reflect the interaction between the fetus and placenta, with the fetus being the major contributor.

Chorionic gonadotrophin (HCG), a glycoprotein produced by the trophoblast, was first discovered by Asheim and Zondek in 1927, and has since been used as a test of pregnancy and placental function. Produced soon after implantation, this hormone reaches peak levels (as measured in the urine) between the 60th and 70th day of gestation and falls to a low level by 130 days. Low titers or absence of HCG during early pregnancy indicate inadequate placental function or fetal death, and "... increased excretion has been found in patients with complications of pregnancy such as diabetes, Rh isoimmunization, toxemia of pregnancy, and in some cases of premature birth. . . . It has been observed that when the excretion of this substance reaches high levels during the last trimester of pregnancy, fetal death can occur." The difficulty and expense of the assay for this hormone, however, have prevented it from being used routinely in clinical practice.

The fetal adrenal is a functional organ throughout pregnancy, reaching a tremendous size at term and producing high concentrations of certain steroids found in umbilical cord plasma. Cassmer, in his classic experiment, demonstrated that the increased placental production of estrogen in pregnancy is primarily dependent on the fetus, since the total estrogen excretion in the mother's urine fell rapidly once the umbilical cord was ligated with the placenta still intact *in utero*. (While estrogen levels fell immediately, progesterone levels did not decrease until definite placental separation had occurred.) Further studies of anencephalic fetuses, in which the maternal urinary excretion of the three estrogenic products—estriol, estrone, estradiol—was minimal, suggests "... the requirement of an intact fetal hy-

pothalamic-pituitary-adrenal axis for the synthesis of normal amounts of estrogen during pregnancy." In the anencephalic fetus the adrenal gland is atrophic and does not produce the precursors necessary for placental production of estrogen, particularly estriol.

Diczfalussy has shown that the principal route of placental estrogen synthesis is via aromatization of a product arising in the fetal adrenal. Dehydroepiandrosterone (DHE) is synthesized in the fetal adrenal, secreted as DHE-sulfate, and circulates to the fetal liver where 16-hydroxylation of this compound primarily occurs. Estriol is formed when 16-OH-DHE-sulfate reaches the placenta where hydrolysis and aromatization of ring A of the steroid nucleus takes place. Estriol is then secreted by the placenta into the maternal circulation, and also into the fetal compartment where it is mainly in the form of estriol sulfate. The placenta, having a high concentration of sulfatase, is able to reconvert the estriol sulfate to estriol. The estriol secreted by the placenta accounts for the major portion (90 per cent) of the increase in estrogen levels observed in the maternal circulation during pregnancy. This is conjugated by the liver and excreted in the urine as estriol-17-glucosiduronate.

Green and Touchstone measured urinary estriol levels as an index of placental function and noted that the excretion rate rose from 0.1 milligram per 24 hours in the first trimester to 20.0-50.0 milligram per 24 hours at term. In 2,015 determinations of 279 patients—including those with normal pregnancies, fetal death, preeclampsia, postmaturity, questionable fetal status or viability, and erythroblastosis—critical levels of estriol excretion were found that correlated with fetal jeopardy in relation to gestational stage (4.0-12.0 milligrams per 24 hours) and to fetal death (less than 4.0 milligrams per 24 hours). Low estriol excretion was indicative of three possibilities: (a) fetal circulation to trophoblastic tissue was inadequate; (b) damage to the placenta compromised estriol production; or (c) the mother or the fetus interfered with the estriol metabolism or excretion of that produced. (In Rh isoimmunization, no correlation was noted between fetal jeopardy and estriol levels, since the defect is in the hematopoietic rather than endocrine system.) By monitoring serial urinary estriol levels, the situation in which the fetus must be delivered in case of jeopardy could be determined.

Although urinary estriol measurements are probably the most widely used and accepted indicators of fetal distress, drawbacks are present. A significant disadvantage is that they must be run on accurately collected 24-hour specimens, and the determination itself is lengthy. The logistics of this test dictate that

it could not be utilized to detect rapid changes in fetal condition. Plasma estriol determinations are faster and correlate with urinary values, and may eventually be the procedure of choice. But these are also beset with difficulties, including expense and lack of specificity; gas-liquid chromatography may provide the answer for the plasma assay.

Estriol determinations are somewhat non-specific in that they are dependent on interaction of all parts of the fetoplacental unit. Progesterone production by the structure is more related to placental function alone, as was shown by Cassmer and corroborated by other workers. Ryan called the placenta an "incomplete" endocrine organ, since it cannot synthesize steroid from the two-carbon base, acetate, in high enough amounts to account for the elevated steroid output in pregnancy; cholesterol is the most likely precursor for formation of progesterone via dihydroxycholesterol and pregnenolone. Progesterone, measured in the maternal urine as pregnanediol, reaches a maximum in the third trimester. Greene, in his review, states that although attempts have been made to correlate pregnanediol levels with the status of pregnancy, even in predicting outcome of threatened abortion, the results from different laboratories are difficult to compare and no standardization can be made. He adds: "It is evident that great controversy exists concerning utilization of pregnanediol excretion to assess placental function. Careful, detailed studies are needed to determine whether the inadequate placenta is associated with a change in progesterone production as measured by pregnanediol excretion."

An indirect method of placental evaluation involves measurement of serum copper levels that have been shown to increase throughout pregnancy until delivery, following which a slow decline in values takes place for 10 to 14 days. The exact mechanism of copper elevation is not known, but is perhaps related to increased estrogen levels and mobilization of copper-containing enzymes necessary for adequate placental circulation and fetoplacental metabolism. Results show that the copper levels are lowered in cases of threatened abortion and other instances of placental compromise, but—as with progesterone, oxytocinase, and other enzyme studies—the clinical evaluations are not readily available or substantiated to a degree of certainty to make this test widely used.

As can be seen, the evaluation of fetal distress is not a settled issue. No test has yet been established as the *sine qua non*, and the reliability of many is still doubtful. Urinary estriol determination is the most readily acceptable at present, but this has its inadequacies, as previously mentioned. For a *general* indicator of fetal distress, the test is fine; but it will not distinguish between a fetal or a placental source

of the difficulty. Further investigation must be done to establish the usefulness of the other parameters of fetoplacental function. Ideally, tests should be available which can assess the status of trophoblastic tissue itself or evaluate the fetal condition apart from its relationship to the placenta, since instances of sudden fetal death with adequate placental function do occur. Perhaps the answer will be found in a combination of laboratory tests which encompass several aspects of the clinical condition.

In consideration of the significance of estriol, a better evaluation might be possible if the physician could determine the status of estriol precursors, measured—possibly—in the amniotic fluid portion of the fetal compartment. By correlation of fetal precursors of estriol and maternal serum/urinary estriol levels, one might be able to point directly to the cause of distress as being primarily a placental or a fetal abnormality.

Enzymes present in and metabolic products arising from the placenta should continue to be measured in various states of pregnancy. As laboratory methods are refined, with improved purification and specificity, more values may be found to reflect the acute and chronic changes in the placenta. Other enzymes involved in intermediary metabolism and in steroid synthesis could be monitored. Those enzymes required for hydrolysis and aromatization of 16-OH-dehydroepiandrosterone sulfate might be detectable in maternal blood; improved methods could measure maternal serum levels of steroid sulfatase abundant in placental tissue.

In all the search for tests to monitor fetal and placental condition, the end result of that concern—viable infant—must not be disregarded. One must consider the consequences of an infant, delivered too soon, with neurological damage or other physical compromise. Whatever tests are best indicators of fetal distress, they should be correlated with some tangible measure of infant welfare, possibly using an assessment of neurological function as a newborn and at subsequent age intervals. The physician should have guidelines for predictability of infant development in relationship to the laboratory values employed in the decision to deliver the fetus.

Weingold said: ". . . emphasis on the treatment of clinical fetal distress has given us too many infants who survive and bear the stigma of a compromised fetal environment or of the overzealous therapeutic effects to rectify that compromise." This feeling seems to be shared by those physicians involved in seeking the specific tests which will help give a clearer picture of apparent compromise of a pregnancy and its outcome.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 1300 Topeka Avenue, Topeka, Kansas 66612.

Clinical Cardiology

Tetralogy of Fallot

JAMES R. MALM, M.D.,* *New York, New York*

TETRALOGY OF FALLOT is a totally correctible cardiac anomaly, accounting for 30 per cent of all infants with cyanotic heart disease and previously associated with a 25 per cent mortality in the first year of life. While the original anatomic description of this defect included dextroposition of the aorta and right ventricular hypertrophy, these are secondary to the basic abnormalities, namely a large ventricular septal defect and severe outflow tract obstruction from the right ventricle. The hemodynamic result is shunting of systemic venous blood across the septal defect to the left ventricle, resulting in peripheral cyanosis and reduced pulmonary blood flow. The degree of outflow obstruction is dynamic, varying with the infant's level of activity or excitement; thus the level of cyanosis may change from moment to moment.

The recognition of cyanosis in an infant is an indication for complete diagnostic studies, including cardiac catheterization and angiography. Catheterization at this age is safe and establishes an anatomic diagnosis, providing clear guidelines for future management. Life-threatening syncopal episodes, secondary to cerebral hypoxia, or other signs of severe reduction in pulmonary blood flow are an indication for a palliative systemic to pulmonary artery shunt. The recent use of the right pulmonary artery to ascending aorta anastomosis has provided excellent increased pulmonary blood flow, although it is associated with a significant mortality in infants below six months of age. Cyanosis, exertional dyspnea and squatting may not appear until the child's demands for oxygen increase with the onset of walking. A shunting procedure is recommended for symptomatic toddlers and children under four years of age to relieve symptoms, allowing normal growth and development until an age is reached when total correction can be carried out with a low mortality. We recommend carrying out total correction on any symptomatic child over the age of four years, irrespective of the presence or absence of the previous shunting operation. Elective total correction of the anomaly is indicated in the relatively asymptomatic child between the ages of seven and ten years. The effectiveness of the palliative shunts decreases in 60 per cent of patients as the oxygen demands increase

with age, and 7 per cent develop endocarditis at the site of the surgically created ductus. All patients with functioning shunts should be re-evaluated for total correction prior to age fifteen.

Total correction of this anomaly requires closure of the ventricular septal defect, relief of the outflow tract obstruction of the right ventricle and ligation of any existing previously constructed shunt. The correction can be carried out with a mortality of less than 10 per cent and the postoperative course is directly affected by the completeness of the surgical repair. When a complete repair has been carried out the postoperative course is benign, without evidence of cardiac failure or pulmonary complications. Complete correction is sometimes limited by the presence of multiple small septal defects or an extreme degree of narrowing, even hypoplasia, of the outflow tract of the right ventricle. When the outflow tract is markedly narrowed, an outflow tract patch or gusset is required to increase the size of the pulmonary annulus. This patch results in pulmonary valvular insufficiency and is usually associated with moderate-to-severe degrees of right heart failure during the first two to three weeks postoperatively. These patients require digitalization for two to three months, but have manifested no cardiac limitations in long-term follow-up. An extreme form of the anomaly may exist with complete absence of the pulmonary artery. This type of defect can now be repaired, utilizing a preserved human aortic homograft as a conduit between the right ventricular outflow tract and main pulmonary artery. This provides a graft with aortic valves functioning at the pulmonary valve level, avoiding a marked degree of pulmonary valvular insufficiency. These grafts have improved the immediate postoperative management of these patients.

The late postoperative results have been dramatic. Corrected patients have normal exercise tolerance and no evidence of cyanosis. In our own series postoperative catheterization data suggests that over 90 per cent of the patients have normal or near-normal postoperative hemodynamics. In addition, late hemodynamic studies with exercise demonstrate that these patients have a normal response in cardiac output to exercise. We feel that these postoperative studies and the maintenance of good hemodynamics in a follow-up period suggest that long-term outlook is excellent for these patients.

* Professor of Clinical Surgery, Columbia University, New York, New York. This article was prepared for the JOURNAL by the Kansas Heart Association.

The President's Message

DEAR DOCTOR:

The votes are counted. The results of the elections are known to all. Only the issues remain unchanged.

Much as we may be concerned with personalities, now is the time to join forces and meet the issues head on. This is medicine's opportunity to lead, to cooperate, to give positive, constructive, unified action toward our goal of making available quality health care for all Kansans.

To do this, we must stay involved in all areas. We must know and have dialogue with the people who were recently elected. We must keep them aware of our opinions concerning all phases of comprehensive health care and all the ramifications of this concept.

We need local "grass roots" activity as well as the "brass roots" activity generated from above. We need you, as individual leaders, to express your ideas in your community and we need you to express your ideas on political and medical issues on the state level.

I am convinced that we in medicine can accomplish much for the public, in respect to availability of and provision of our services, by being willing to experiment with different delivery systems, as long as we use quality as our guide.

I am equally convinced that when medicine is united on programs presented to the legislature, as long as the programs are in the best interest of the public, we can and will be successful in our leadership.



A handwritten signature in cursive script that reads "Francis J. Collins MD".

President



The Care and Feeding of the Budget

The time approaches for that annual phenomenon, the birthing of the budgets. The infinite variety of these ubiquitous creatures makes it seem advisable to review their reproductive and alimentary physiology. Although the professional breeders of these organisms jealously guard the secrets of their propagation, this office has obtained some classified information we feel the public is entitled to have.

There are two primary species, *B. domesticalis* and *B. federalis*. The former need not concern us since it is extremely difficult to culture and, even under optimum conditions, it usually does not survive more than a couple of months. *B. federalis*, however, has certain features contributing to its survival, and the information contained herein applies to its numerous subspecies as well. There is an element of cannibalism about it in that its very survival seems to be one of the main factors in the destruction of *B. domesticalis*. The federal variety is as hardy as the domestic is delicate, and it is presumed to absorb something from the atmosphere in such amounts the latter is unable to survive. In fact, it has been suggested that if *B. f.* were to die out, there would be no need for *B. d.* anyway.

One significant feature of the federal variety is that it is not just a single organism but a colony of innumerable organisms. The similarity to the sponge is noted. It has a high rate of metabolism which requires a steady and plentiful supply of nourishment. It lives on a special high vitamin, high protein substance known as pelf. The breeders have developed a highly complicated quota system with a nationwide network of collecting stations to which the growers bring their crops as soon as they are harvested—sometimes even before. Some of the malcontents

among the workers, sensing a feudalism (or is it futilism?) in this system, have been known to complain about their working conditions and the constant pressure to increase their quotas, but the breeders have motivated them by promising them that they may keep any excess they produce. So far this has not been known to happen.

The breeders carry the heavy responsibility for maintaining favorable growing conditions for the budget at all times. One thing they watch particularly is which way the wind is blowing. Vertigo, resulting from the rich diet, is the normal state for the budget and it must be carefully guarded against a moldy blight known as *balance*. If this threatens, emergency crews of breeders move in and subdivide the cultures to minimize contamination.

The result of the tender care on the part of the breeders is a luxurious growth which creates a problem of housing, but this has been handled by having some fifty subsidiary laboratories which are constantly competing to relieve the central laboratory of some of its growths. (There are numerous foreign laboratories which show a keen interest in our budget culture since it supports their experiments as well, but it is beyond the scope of this presentation to get into this phase.)

The budget is parthenogenetic. Gestation begins immediately after birth, exactly coinciding with the life span of the mother colony. The mother unit undergoes gradual depletion as the embryonic form develops so that by the time of parturition, the offspring is usually larger than the mother. Obviously, the delivery of the new budget is a painful and lacerating procedure. It doesn't really matter, however, for, in the ultimate gesture of maternal love, the mother dies as the infant is born.

If you doubt the physiological possibility of such a process, remember one of the basic and fascinating features of the creature: its ability to pass on to the next generation any nutritional deficit it may have incurred during its year of life. Originally, it reproduced only in the amount of its own substance, but some years ago, a brilliant laboratory worker devised a system known as deficit feeding. This is known technically as *gobbledegook* from the German, *juggeln-die-buchen*. Thus, each generation derives its sustenance from the past, present and future, and it's hard to beat that.

From these developments has come the high state of budget culture today: the marvelous network of laboratories devoted to the propagation of the species, and a way of life and tremendous incentive for the producers of pelf to increase their production quotas. One might imagine that the ever-increasing food supply might some day maintain the budget for more than its traditional year of life, but we need not worry. The breeders are vigilant that any pelf remaining at the end of the budget's year is used up, even if they have to eat it themselves.—D.E.G.

Medical-Legal Relationships

Among the more successful committees within the Society is the committee that works with the Kansas Bar Association. Some years ago, this committee, together with a comparable committee of attorneys, developed an interprofessional code for attorneys and physicians. In 1958, it was officially adopted by the House of Delegates of each professional association.

Included in this interprofessional code is the provision for a continuing joint committee directed to "jointly attempt to mediate and arbitrate, in the first instance, any disputes arising between individual physicians and lawyers, or between the two professions."

The joint committee now invites the medical profession to report any problems physicians have encountered with attorneys. The Bar Association is similarly requesting information from attorneys. Specifically, is the physician paid for medical reports, depositions, or testimony requested by attorneys? Are attorneys considerate of the physician's time in scheduling court appearances? In general, the committee invites from every member suggestions for improving the relationship between attorneys and physicians. Every suggestion received will be submitted to the joint committee. Following their deliberation, hopefully, further agreement with the Kansas Bar Association can be achieved.

The Kansas Bar Association has been cooperative in many respects and expresses its desire to resolve every possible local disagreement between attorneys and physicians. The request for recommendations comes from a desire on the part of the Kansas Medical Society to do the same.

Renal Dialysis Centers

Under the provisions of HB 1823 enacted by the 1970 Session of the Legislature, five Dialysis Centers have been accredited. For information concerning the Renal Disease Program of the state of Kansas you may contact the center nearest you or this office:

Kansas State Department of Health
State Office Building, 5th Floor
Topeka, Kansas 66612
Area Code 913/296-3745

1. University of Kansas Medical Center Dialysis Center
Contact: Donald R. Tucker, M.D.
Address: Rainbow Boulevard at 39th Street, Kansas City, Kansas 66103
Phone: Area Code 913/236-5252, Ext. 676
2. Kansas City Dialysis and Transplant Center, Inc. (K.C. General)
Contact: Robert G. Muth, M.D., Mr. Herb C. Asel, Project Administrator
Address: 24th and Cherry Streets, Kansas City, Missouri 64108
Phone: Area Code 816/421-8060
3. St. Luke's Hospital of Kansas City
Contact: Ralph R. Hall, M.D.
Address: Wornall Road at Forty-Fourth, Kansas City, Missouri 64111
Phone: Area Code 816/531-8500
4. St. Francis Hospital
Contact: Tom Meredith, M.D.
Address: 929 North St. Francis, Wichita, Kansas 67214
Phone: Area Code 316/262-6211, Hospital; Area Code 316/682-8551, Wichita Clinic
5. Trinity Methodist Hospital
Contact: C. C. Conard, M.D.
Address: 1107 Sixth Avenue, Dodge City, Kansas 67801
Phone: Area Code 316/227-8133

The Council

Report of Meeting, September 27, 1970

A meeting of the Council was held on Sunday, September 27, 1970, at the Topeka (Downtown) Ramada Inn, beginning at 11:00 a.m.

Prior to the Council meeting, Dr. Francis T. Collins, President, spoke to the Council and to the five commissions on Foundation Programs and Peer Review. At the conclusion of this presentation, the meeting of the Council was called to order.

Present were: (Officers) Dr. F. T. Collins, President; Drs. T. P. Butcher, C. C. Conard, K. L. Graham, C. M. Lessenden, Jr., J. C. Mitchell, L. R. Pyle, W. J. Reals, T. F. Taylor, E. D. Yoder; (Councilors) Drs. H. F. Coulter, S. S. Daehnke, G. W. Fields, J. D. Huff, M. R. Knapp, D. L. Larsen, J. J. Marchbanks, W. E. McAllaster, S. C. McCrae, R. R. Melton, G. L. Mowry, Vale Page, W. G. Rinehart, W. O. Wallace, F. P. Wolff; (Commission Chairmen) Drs. J. N. Blank, W. E. Meyer, W. R. Roy, E. J. Ryan, N. V. Treger; (Specialty Societies) Drs. W. L. Beller, J. A. Budetti, A. C. Cherry, Jr., A. A. Fink, D. L. Gray, R. C. Lawson.

Also present were Drs. E. G. Campbell, J. B. Fisher, E. S. Gendel, C. T. Hagan, H. W. Hiesterman, J. H. Holt, J. L. Morgan, William Nice, D. R. Pierce, H. J. Ransom, J. A. Segerson, E. F. Steichen, C. R. Svoboda, E. N. Tiheh, R. P. Woods. Present from the University of Kansas Medical Center were Dr. Charles Brackett, Acting Dean; Messrs. Norman Kahn, Larry McDonald, and Muller. Representing Kansas Blue Cross-Blue Shield were Messrs. Kenneth Allen, Sam J. Barham, and Proctor Redd. Also present were Mrs. Martha Hunt, Executive Secretary, Wyandotte County Medical Society; Mr. Dwight Allen, Executive Secretary, Sedgwick County Medical Society; Mr. Hank Parkinson of Parkinson and Associates; Mr. Oliver E. Ebel, Executive Director, and Mr. R. G. Swenson, Executive Assistant, Kansas Medical Society.

Executive Committee

The motion was made and seconded that the following items presented by the Executive Committee be adopted:

1. That *Sturges' Rules of Order* be used by this Society instead of *Roberts' Rules of Order*, principally because it includes a system of reference committees.

2. That the Vice Speaker serve as Parliamentarian for the House of Delegates and the Council.

This motion carried.

Reports From Commission Chairmen

Each chairman reported on the work done by his commission. Specific actions recommended by the various commissions are recorded here.

COMMISSION FOR EDUCATION

DR. W. R. ROY, CHAIRMAN

The following resolution was adopted:

Kansas School Health Advisory Council

WHEREAS, The Kansas Medical Society was one of the founders of the Kansas School Health Advisory Council, formed in 1958 in cooperation with KUMC, the KU College of Education, the State Department of Education and the State Department of Health, among others; and

WHEREAS, Three KMS physicians have been president of this group; and

WHEREAS, The medical aspects of school health affect the physician in his daily practice and have had a leadership position through the Council in developing a handbook of Emergency Standing Orders and a manual on Athletic Injuries; and

WHEREAS, From 1958 to 1967 its contribution of \$500 per year was forthcoming, but was not given in fiscal 1968/69 of the Kansas School Health Advisory Council—but was promised from the KMS office in writing, but never given, therefore, be it

Resolved, That for fiscal 1970/71 (October KUMC postgraduate course is the annual meeting) the KMS pay its currently due contribution (tax deductible) of \$500 and continue on an annual basis.

COMMISSION FOR SCIENTIFIC STUDY

DR. N. V. TREGER, CHAIRMAN

A motion was made and seconded that the following resolution be adopted. After discussion, the motion was made and seconded that the resolution be accepted and that its wording be revised for later submission to the House of Delegates. This motion carried.

Commission for Scientific Study

WHEREAS, The Kansas Medical Society has recently given additional representation to 14 specialty societies in the House of Delegates; and

WHEREAS, The Kansas Medical Society has recognized the need to provide a method for these groups to have a method of bringing possible scientific and medical practice methods to this Society through im-

proved coordination between the Specialty Societies; and

WHEREAS, By the adoption of Resolution 70-31 this commission consists of one member from each specialty society and such additional members as may be desired; and

WHEREAS, The Commission for Scientific Study has also been empowered to serve in the liaison capacity to promote coordination between the Medical Society and specialty societies organized within the state; therefore, be it

Resolved, That the name of the Commission for Scientific Study be changed to Commission for Medical Practice and Specialty Societies; and be it further

Resolved, That it is recommended that resolutions from specialty societies which deal with medical practice matters and are intended for action by House of Delegates shall to such degree as is practical be first submitted to this commission for study and approval.

COMMISSION FOR SOCIETY ORGANIZATION DR. W. E. MEYER, CHAIRMAN

The following motions were approved:

1. That an additional information sheet for physicians only be added to the Legislative Bulletin. The sheet will be green in color.

2. That the first Legislative Bulletin be sent to every member of the Society with a card asking each member if he desires to receive this material.

3. That the subsequent mention in the Bulletin of bills by numbers be modified to also give the title of the bill.

4. That the By-Laws be reprinted in loose-leaf form. A motion was then made and seconded authorizing the Executive Committee to make the final decision in determining whether the By-Laws would be printed or mimeographed in loose-leaf form.

5. That the Monday night banquet (at the annual meeting) become a Society function, that it be co-educational and that the local host society plan the function, together with the State Planning Committee.

COMMISSION FOR SOCIOLOGY AND ECONOMICS DR. E. J. RYAN, CHAIRMAN

Two items were presented for discussion by this commission:

1. The position of Medical Coordinator to the Welfare Department. After some discussion, during which Dr. Pyle expressed his opinion that this should be a full time rather than a part time position, and that possibly some physician in Kansas would be willing to accept this employment, the motion was made and seconded that the Executive Committee attempt to find a candidate for this position. This motion carried.

2. The motion that the radiological Relative Value Schedule be approved subject to its fitting into the other Kansas Relative Value Scale factors was seconded and approved.

New Component Society

Dr. Collins introduced Mr. Larry McDonald, president of the University of Kansas Medical Student Society, who accepted the charter for the newly formed society. The Council voted unanimously to include the KU Medical Student Society as a component society, giving its members full membership in the Kansas Medical Society.

KaMPAC Board of Directors

Dr. Collins asked the Council to approve his appointment of Dr. Norton L. Francis to again serve as chairman of KaMPAC. This appointment was approved.

Members of the KaMPAC Board of Directors, elected at this meeting, are: 1ST CONGRESSIONAL DISTRICT: Drs. V. W. Filley, Vale Page, T. F. Taylor, Mrs. Evan Williams; 2ND CONGRESSIONAL DISTRICT: Drs. R. H. Baehr, R. H. O'Donnell, T. A. Montgomery, Mrs. Gerald Mowry; 3RD CONGRESSIONAL DISTRICT: Drs. J. R. Cooper, H. F. Coulter, M. R. Deitz, Mrs. Ernest Neighbor; 4TH CONGRESSIONAL DISTRICT: Drs. M. R. Knapp, L. F. Scanlon, W. E. Meyer, Mrs. W. E. Meyer; 5TH CONGRESSIONAL DISTRICT: Drs. William Aldis, G. A. Kassebaum, M. D. Snowbarger, Mrs. Edwin F. Price.

Miscellaneous Reports and New Business

Dr. Charles Brackett, acting dean of the University of Kansas Medical School, reported on developments at the school and stated that the school plans to increase its enrollment and graduate more physicians in the future.

Dr. C. M. Lessenden, Jr., Treasurer, presented the budget. He announced that the AMA has officially notified the Society that the dues for 1971 will be \$110. Upon completion of his report, Dr. Lessenden moved that the budget be accepted and that dues for the Kansas Medical Society for the year 1971 be \$75. This motion carried.

The motion was made, seconded and carried that the Society endorse a policy statement on medical records (published on page 450 of this issue).

Dr. Collins reported that the Menninger Foundation has carried on several successful seminars on mental health, which have been well received by the Academy of General Practice and others. They are requesting federal funds for continuation of this project, but need Society approval before their request can be submitted. The motion that this project be approved carried.

The subject of Foundation Programs for the Society was presented and discussed. The motion was made and seconded that the Executive Committee submit a Foundation plan for consideration at the next meeting of the Council. An amendment was then offered and seconded that such information be disseminated to the whole Society not later than March 1. The amendment carried, and the amended motion was adopted.

The following resolution, submitted by the Wyandotte County Medical Society, was accepted upon a motion duly made and seconded:

WHEREAS, There is a need for more doctors in Kansas; and

WHEREAS, The Wyandotte County Medical Society has an interest in relieving this shortage; therefore, be it

Resolved, That the Wyandotte County Medical Society encourages the Kansas Medical Society to work with the University of Kansas and do everything in its power to increase the number of physicians graduated and practicing in Kansas.

Following a report on the Public Information Service (Parkinson and Associates), which was described as worth while and successful, the Council adjourned.

Announcements

NOVEMBER

- Nov. 29 National Conference on the Medical Aspects of Sports (AMA), Sheraton-Boston Hotel, Boston, Massachusetts. For information write the Committee on the Medical Aspects of Sports, AMA, 535 N. Dearborn, Chicago 60610.
- Nov. 29- Dec. 2 American Medical Association, annual clinical convention, Boston. Write: Ernest B. Howard, M.D., Exec. Vice President, AMA, 535 N. Dearborn, Chicago, 60610.

DECEMBER

- Dec. 5-10 American Academy of Dermatology, annual meeting, Palmer House, Chicago. Information: Frederick A. J. Kingery, M.D., Secretary-Treasurer, American Academy of Dermatology, 2250 N.W. Flanders, Portland, Oregon 97210.
- Dec. 10-11 Kansas City Society of Ophthalmology and Otolaryngology, Plaza Inn, Kansas City, Missouri. Write: R. Dean Williams, M.D., Secretary, 305 W. 43rd Street, Kansas City, Missouri 64111.

POSTGRADUATE EDUCATION

University of Kansas:

Nov. 18-20 *Medical Technology*

Dec. 7-8 *Gynecology and Obstetrics*

For further information write the Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas 66103.

University of Colorado:

Nov. 19-21 *The Battered Child Symposium*

For further information write the Office of Postgraduate Medical Education, University of Colorado School of Medicine, 4200 E. Ninth Ave., Denver 80220.

Along the Bookshelf—

Clendening Medical Library

RECENT ACQUISITIONS

- Cole, Luella. Psychology of adolescence. New York, Holt, Rinehart and Winston, 1970.
- Davis, Hallowell. Hearing and deafness. New York, Holt, Rinehart and Winston, 1970.
- Dowling, Harry Filmore. Medicines for man; the development, regulation, and use of prescription drugs. New York, Knopf, 1970.
- Grunebaum, Henry. The practice of community mental health, by 55 authors. Boston, Little, Brown, 1970.
- Hatterer, Lawrence J. Changing homosexuality in the male; treatment for men troubled by homosexuality. McGraw-Hill, 1970.
- Joint Commission on Mental Health of Children. Crisis in child mental health: challenge for the 1970's; report. New York, Harper & Row, 1970.
- McNeil, Elton B. The psychoses. Englewood Cliffs, N. J., Prentice-Hall, 1970.
- Mannoni, Maud. The child, his "illness," and the others. New York, Pantheon Books, 1970.
- Masters, William Howell. Human sexual inadequacy. Boston, Little, Brown, 1970.
- Peel, John. Textbook of contraceptive practice. Cambridge, University Press, 1969.
- Reith, Edward J. Atlas of descriptive histology. New York, Harper & Row, 1970.

(Continued on page 453)



Personalities—IN KANSAS MEDICINE

Garland L. Campbell closed his practice in Arkansas City the first of July and moved to Omaha, Nebraska, where he began a residency in urology at the University of Nebraska Hospital.

In October, the community of Atwood honored Charles E. Henneberger with a reception in appreciation of his 50 years of medical service to the people in that area.

Arthur C. Cherry, Jr., Topeka, has been selected by the American Academy of Pediatrics to serve as Head Start Consultant in Kansas.

Joseph A. O'Grady, Halstead, attended the annual meeting of the American Association of Medical Clinics held in San Francisco in September.

William J. Reals, Wichita, has been named president-elect of the College of American Pathologists (CAP). Dr. Reals, president-elect of the Kansas Medical Society, is pathologist and director of laboratories at St. Joseph Hospital and Rehabilitation Center in Wichita. Russell J. Eilers, professor of pathology and director of clinical laboratories at KUMC, was elected to serve a three-year term as a governor of CAP. The appointments were made at the annual meeting of the College of American Pathologists in Atlanta, Georgia, in September.

Alexander C. Mitchell of Lawrence was installed as president of the Kansas Heart Association, Inc., for 1970-71, at the association's annual meeting held in Wichita in September. Three Wichita physicians were also elected to offices: James L. Salomon is a new member of the executive committee, and Edward N. Tihen and Roger J. Cunningham were appointed to the board of directors.

"Planning for a Healthier Kansas" was the topic of the day-long conference sponsored by the Kansas

Coordinating Council for Health Planning and the Kansas Board of Health. The meeting was chaired by Thomas F. Taylor, Salina, chairman of the Coordinating Council for Health Planning. Francis T. Collins, Topeka, KMS president, addressed the afternoon session on the subject, "New Directions in the Delivery of Health Services."

James L. Salomon, medical director of the Wichita Boeing plant, presented a paper, "Employing the Handicapped," at the Cardiac Rehabilitation Conference held in Los Angeles. The conference was sponsored by the Department of Health, Education and Welfare.

George E. Burket, Jr., Kingman, was a guest speaker at the American Chemical Society meeting in Chicago in September.

New officers of the Kansas Academy of General Practice, elected at the organization's annual meeting in September, are: Ernie J. Chaney, Belleville, president; W. R. Lentz, Topeka, vice president; Richard R. Brummett, Neodesha, secretary; Alex Scott, Junction City, director, and Norman H. Overholser, El Dorado, delegate to the American Academy of General Practice.

Edward L. Jones, Great Bend, has been awarded certification in anatomic and clinical pathology by the American Board of Pathology.

Daniel L. Azarnoff, Kansas City, has been appointed to a subcommittee of the United States Pharmacopeia Committee of Revision. Dr. Azarnoff is a member of the Subcommittee on Scope which will study the selection of drugs for Pharmacopeial recognition.

Laurence S. Nelson, Salina, is a patient at Mayo Clinic, Rochester, Minnesota.

Vox Dox

(The deadline for letters to the Editor is the 20th of the month preceding anticipated publication.)

Dear Editor:

I very much enjoyed the article on marihuana in the August issue, by Mr. Robert Catania, a fellow medical student. It is refreshing to read a thoughtful review of the literature, in this day when so much is written with so little to say on drug problems.

Please send me the reference list.

ELLIS A. PENNY
Kansas City, Kansas

Dear Editor:

I agree completely with Dr. Karl Menninger's statement (*J. Kansas Med. Soc.*, Sept., 1970, p. 373) to the effect that articles in your journal "would have looked better" if references had been included with the articles. My views on the subject are based on an interest I have had for many years in bibliographic references in medical journal articles.

Anyone who has ever studied a medical journal article with any degree of thoroughness will acknowledge that such a study often requires inspection of specific references to learn the name of an author or the title of a paper cited, data which frequently enable the student to weigh the significance of the information in question. Often the full implication of a reference may not be appreciated until one sees what its title is. Then, too, appending the list of references with an article as it appears in a journal enhances immeasurably the article's value as a reference source itself, and consequently increases the likelihood of its being used as a reference. If the articles in your journal are to be regarded as manifestations of academic endeavor, which I am certain is your intent, then failure to include a reference list with the articles "in the interest of economy" denigrates the effort and is tantamount to false economy.

GEORGE X. TRIMBLE, M.D.
Kansas City, Missouri

Assuming Mr. Penny's letter to be a vote in favor of returning to the practice of including bibliographic references with the student theses, the vote now stands: for, 3; against, 0; abstentions, 1,699. The Editorial Board will re-examine the matter. And, as Ann Landers says, thanks for writing—Ed.

Dear Mr. Editor:

Your October comments can be answered.

1. We are satisfied with the Society and its publication.
2. We have an opinion that both can be better.
3. We do read. We are smothered with too much to read.
4. We can write. Patient histories, progress, utilization, etc., etc.

We are a harassed minority group.

We like to think we are all nice guys. Individually, we enjoy good relationships with our patients.

As a group—such as KMS and AMA—we are called upon to participate in so many projects that we tend to neglect our own business.

Our magnanimity toward others should not obviate the necessity of practicality for our own members.

RALPH R. MELTON, M.D.
Marion, Kansas

KMS Education—Information Program

Activity Report September 15-October 15

Special Projects

Special projects occupied the bulk of education-information activity for this 30-day period. The biggest being Community Health Week.

More than a dozen public service radio spots on the event and related themes have gone to Kansas radio stations for use during the week of October 18.

TV spots with accompanying visual slides are also being distributed.

Governor Robert Docking is scheduled to make the official proclamation, recognizing Community Health Week, and the Kansas Medical Society's role in health week.

Dr. Francis T. Collins will accept the proclamation from the Governor in the capitol offices.

Clyde Anderson of the Kansas Division of the American Cancer Society is submitting radio, television, and other media spots in order that the Cancer Society can join with the KMS in emphasizing Community Health Week under central coordination.

Efforts indicate that this year's Community Health Week may be one of the most successful in past years.

The following is a breakout of Kansas radio stations that participated in the first round of public service continuity spots. The 31 stations programmed a total of 1,555 exposures for KMS:

<i>Call Letters</i>	<i>Community</i>	<i>Call Letters</i>	<i>Community</i>
KOFO	Ottawa	KIND	Independence
KWBW	Hutchinson	KLEY	Wellington
KNIC	Winfield	KKAN	Phillipsburg
KIUL	Garden City	KSCB	Liberal
KXXX	Colby	WIBW	Topeka
KMAN	Manhattan	KLOE	Goodland
WREN	Topeka	KAYS	Hays
KARE	Atchison	KGGF	Coffeyville
KUPK	Garden City	KJCK	Junction City
KNEX	McPherson	KGNO	Dodge City
KEWI	Topeka	KKOY	Chanute
KULY	Ulysses	KANS	Larned
KAKE	Wichita	KWHK	Hutchinson
KVGB	Great Bend	KFH	Wichita
KOAM	Pittsburg	KMDO	Ft. Scott
KFDI	Wichita		

Publicity

Publicity-wise, a release concerning sweeping reforms the Society proposes in Kansas ambulance service received particularly good usage. It moved on both the AP and UPI wire services and was widely played in daily and weekly papers.

Another release dealing with the Society being the first in the nation to allow medical students full membership also moved on both wire services and received equally good exposure.



Woman's Auxiliary

Auxiliary Annie Reports on Fall Conference at Quinter

Did you miss us last month? We hope so, and we're sorry about that, but we were all tied up with fall conference out at Quinter. You know, "way out west in Kansas where the Herman Hiesterms live."

If we'd listen carefully enough, it's entirely possible that we would hear something like this: "You auxiliary women are all alike, always running around somewhere. . . ." This is probably what some of you are thinking, particularly if your wife happened to be elected as a county president or president-elect, and for the first time in donkey's years she had to go somewhere alone on business. Since she probably was unable to explain adequately what fall conference is (after all, she had never been there, so how could she?), perhaps you grunted and muttered something like "monkey business, I bet!"

It isn't all that foolish, really. By the time an auxiliary spouse has worked through some of the state chairmanships and maybe into a state or national office, most husbands know there is more to medical auxiliary than feminine foolishness. Either that, or they are resigned to the auxiliary's gain of a good helper, and their loss of the cook for a couple of days now and then.

But, just in case some of you readers might be in the former position, still muttering "monkey business" through your beards while stuffing down a cold bowl of cornflakes instead of the usual bacon and egg breakfast, we thought we might tell you about what we did at this year's fall conference.

To begin with, we have 20 committees at the state level. The chairmen of several of these committees present the workshops for the new county officers and the members of the state board. The choice depends upon the areas that the state president wishes to stress during her year in office. The program itself is planned by the president-elect (Mrs. Donald Pierce, Topeka, this year) and committee chairmen of the chosen areas are called in to help plan the day-long work session.

This year, the state fall conference featured programs on alcoholism, health careers, membership and legislation. We always like to use big name professionals when we can, so for a starter we asked Dr. William D. Leipold, the clinical director at Valley Hope Alcoholism Center, Norton, to speak on alcoholism. Dr. Leipold briefed us on the history of the Center and told about some of the work it is doing to rehabilitate the patients who come there.

Since adequate personnel in the allied health fields

has become a growing problem, we asked Dr. Cramer Reed, dean of the College of Health Related Professions, Wichita State University, to tell us about their new program to train personnel in health fields. Our state health careers chairman, Mrs. Warren Meyer, Wichita, showed slides relating to the various careers and suggested programs and other ways to encourage students to choose and to enter a health field. She related her program sequence to a "Health Careers Fashion Forecast, Mini-, Midi- and Maxi."

Our national North Central Vice-President, Mrs. Chester Young, Kansas City, presented a membership skit which suggested ways to encourage non-member medical wives to participate in auxiliary work. A satire on auxiliary meetings, the skit starred Mrs. Charles Hinshaw, Hutchinson, as a young "hippie-type" doctor's wife. Ordinarily a pert little brunette, Carolyn brought the house down with her comments on auxiliary. Accentuating these with a few well-spaced shouts of "Peace, sisters!" and looking very wise through her granny glasses, she was a picture of animated illogical reasoning. Her long blonde wig, yellow poncho and blue jeans added to the atmosphere of her approach.

The workshop concluded with a report by the legislative chairman, Mrs. Phillip Godwin, Lawrence. She made suggestions on how the members could work to our best advantage during the coming elections.

We really don't expect you to believe that state fall conference is all work and no play. No shrewd, woman-knowing doctor would ever swallow that, so we'll have to admit that we played a little too. No doubt most of you have heard about Quinter's famous "Wagons Ho!" trip. Our ladies didn't have time to stay for the whole three day outing, but they did soak up a good bit of the same atmosphere in an evening around the Wagons Ho! campfire. After riding to the cookout sight in covered wagons and eating dinner chuckwagon-campfire style, they watched the campfire musical program, and sang old western ballads. They looked mighty pretty in their sunbonnets and long dresses, too, although the general consensus of opinion was that calico maxi-dresses aren't as warm as modern blue jeans. Drs. Carl Gunter and Herman Hiesterman and "Cowboy Swede" Swenson contributed a bit of male atmosphere by attending the cookout in Gay Nineties or western clothes.

(Continued on page 453)

Medical Record Guide

(Published here is the 1970 Revised Medical Record Guide, previously approved by the other participating agencies and adopted by the Council of the Kansas Medical Society on September 27, 1970.)

PREFACE

The Medical Record Guide has been developed for the purpose of providing assistance in handling what sometimes seems to be a perplexing situation. It is not intended as a substitute for the advice of the hospital's attorney. To the contrary, his advice should be sought in the development of the hospital policy in this area.

Medical Records serve a number of purposes:

- As protection of the patient, providing a record of past illnesses for easy availability in the event of reoccurring illness.
- As a mechanism to the patient for proof of illness and the care given.
- To protect the hospital, providing evidence in the establishment of a claim for hospital services rendered or evidence for defense in the event of a liability suit.
- To provide facts for the preparation of hospital statistics and can be used as an instrument in the evaluation of medical services rendered to patients in the hospital.
- To provide identification of deceased and to provide the necessary data for medical research and education.

Section 28-34-9. Medical Record Departments of the Kansas Hospital Regulations, fifth edition, 1969, is included in the Appendix for easy reference.

This Guide has the approval of the following organizations:

- Kansas Association of Medical Record Librarians
- Kansas Chapter, Health Insurance Council
- Kansas Hospital Association
- Kansas Medical Society

General Nature of Medical Records

A. NON-CONFIDENTIAL INFORMATION

1. Identification such as name, age, address, on admission
2. Verification of hospital care which includes—

- Inpatient: Dates of admission and discharge
- Outpatient: Dates of treatment

B. CONFIDENTIAL INFORMATION

All information other than that listed as non-confidential shall be considered as confidential.

C. CONTENT OF THE MEDICAL RECORD

The State Department of Health requirements for the contents of the records are in Section 28-34-9 of the Hospital Regulations, 5th edition, 1969. This section of the *Regulations* is quoted in the Appendix of this Guide.

Paragraph (e.) of Section 28-34-9 specifies the information that the medical record shall contain. The recommendations of the Joint Commission on Accreditation of Hospitals are practically the same.

Release of Information From Medical Records

A. USE WITHIN THE HOSPITAL

1. To Physicians

Information may be given to any properly identified attending physician for his use in caring for the patient without the permission of the patient. When a patient is admitted to the hospital under the care of another physician, all previous records will be routinely available to the present attending physician.

2. To Staff Nurses

Staff nurses, and other hospital employees having patient-related reasons for doing so, may inspect medical records only as necessary to carry out their professional duties.

3. To Hospital's Legal Consultant

Information on records may be furnished to the hospital's legal representative or insurance carrier to protect the interest of the hospital in cases involving liability or compensation.

4. Research and Study

For the expressed purpose of research and study, medical records may be used without the written authorization of the patient. However, every precaution should be taken to insure confidentiality of the record and anonymity of the patient.

B. FOR USE OUTSIDE THE HOSPITAL

1. Release of non-confidential information may be made at the discretion of the hospital.

2. General rules with reference to release of confidential information:

- a. The confidentiality of the medical record is the right of the patient. This right can be waived by the patient through a signed authorization to the hospital.
- b. The viewing of charts may be permitted in the presence of the hospital administrator or his designate at the discretion of the hospital.
- c. In the event that any part of the chart is required by the person viewing the chart, the part shall be abstracted and/or reproduced at the expense of the person making the request. Charges will be based upon the cost or time and material. A copy of all abstracts and/or reproductions will be filed with the medical record. The use of tape recorders in abstracting parts of the chart is prohibited.
- d. Items that need to appear on an authorization in order to be valid:

(1) Signature

- (a) If competent and if of legal age*—by the patient; or
- (b) If the patient is a minor, by one of the following:
 - By a parent, if no legal guardian has been appointed; or,
 - The legal guardian of the person, if one has been appointed; or,
 - Next of kin, if neither of the above is possible; or,
- (c) If the patient is deceased—by the administrator of the estate if one has been appointed; otherwise by the next of kin; or
- (d) If the patient is incompetent—by the guardian if one has been appointed; otherwise by the next of kin.

Note: In addition to above, as a courtesy or board established ruling, the signature of the attending physician may be requested.

- (2) Dates of Hospitalization
- (3) Name of Patient
- (4) Name of Hospital
- (5) Name of party or company to whom information is to be released.
- (6) Date of Authorization
 - (a) Not valid if presented more than 60 days from date of authorization.
 - (b) Not valid if dated prior to period of hospitalization.
- (7) Purpose for which information from record is to be used.

3. Special provisions and comments with relation to certain third parties.

a. Blue Cross-Blue Shield

The release of information by Blue Cross members is authorized in paragraph 9, Section II, of the Blue Cross Agreement with Member Hospitals. This reads as follows:

"The Hospital agrees upon request to make available to Blue Cross during the regular business hours of the hospital, any records, financial or medical, covering any treatment of any person claiming to be a member or former member, in accordance with provisions in Membership Agreements."

b. Insurance Companies

Proper authorization from the patient is required before releasing confidential information.

Hospital cooperation in the release of information to insurance companies facilitates proper and prompt payment of claims. Completed insurance forms or abstracts will not be given to the patient, but mailed directly to the claim paying agent.

c. Attorneys

Attorneys presenting a proper authorization may be allowed to inspect a medical record in the presence of the hospital administrator or his designate. Abstracts from these records may be made and furnished directly to the attorney.

d. Physicians other than those on the Hospital Medical Staff

Information may be given to any properly identified physician, who may not be a staff physician, after permission is obtained from the patient and the attending physician. Outside physicians who make inquiries concerning patients must present proper authorization. All reasonable courtesy will, of course, be shown these physicians. However, the interests of the patient and the hospital must be observed.

* The Kansas Statutes, Chapter 38, Section 101, 1965 Supplement, reads as follows: 38-101. *Age of Majority; marriage, effect.* The period of minority extends in males and females to the age of twenty-one (21) years: Provided, That every person eighteen (18) years of age or over who is or has been married, shall be considered of the age of majority in all matters relating to contracts, property rights and liabilities, and the capacity to sue and be sued.

e. Governmental Agencies

When presented with positive identification of a person requesting information as a bona fide law enforcement agent or internal revenue agent, the hospital should provide all reasonable assistance in giving identification information. Unless the law specifically provides the right to confidential information to the particular governmental agency, a proper authorization is required.

f. News Media

Confidential information should not be released to news media without proper authorization. It is recommended that all hospitals establish a policy for the release of non-confidential information.

g. Other Hospitals

Information should be furnished upon request from other hospitals upon receipt of proper authorization. It is, of course, recommended that hospitals cooperate in the exchange of information. Certain information may be given by telephone, but only in the case of a definite explained emergency, and in such case, it is suggested the call be returned in order to verify the identity of the individual to whom the information is given.

h. Employers

The fact that an employer has paid or has agreed to pay hospital charges for an employee, does not thereby authorize the hospital to give the employer information without written authorization from the patient.

i. Patients or their representatives

Requests by patients for information contained in their own records should be referred to the attending physician.

C. FOR EXTERNAL USE INVOLUNTARILY

1. Subpoenas Duces Tecum

Hospitals are required to respond to a summons issued by the clerk of any court. Where the hospital is out of the jurisdiction of the court issuing the subpoena, it is recommended that the hospital consult its legal counsel.

It is suggested that the hospital administrator designate the persons responsible for court appearances. There should be at least two persons qualified to serve in this capacity in order to permit compliance with the summons even during a vacation period.

Should the court hold the medical record, the receipt furnished by the clerk of the court should be filed in lieu of the record until its return. It is well to file a photostatic copy of the record during this period.

Retention of Hospital Medical Records

It is recognized that each hospital must formulate its own policy regarding the preservation of medical records.

Paragraph (c.) of the Kansas Hospital Regulations (Appendix) requires that the medical records shall be maintained in retrievable form, such as microfilm, for twenty-two years after the date of the last discharge of the patient.

The twenty-two year period seems to satisfy any needs that might arise through court action even though injury of an infant was involved.

Legal consultants have said there could be instances in which an individual might have had a period of time in prison or during which he was declared incompetent and that the twenty-two years could be extended.

For those hospitals wishing to reduce the bulk of their records by means of some abstracting process, it is recommended that this not be done prior to the expiration of the twenty-two year period.

APPENDIX**28-34-9. Medical Record Department**

a. A medical record shall be maintained for every patient admitted for care in the hospital or who receives services as an outpatient.

b. Medical records are the property of the hospital. Only authorized personnel shall have access to records.

c. Medical records shall be maintained in retrievable form for twenty-two years after the date of last discharge of the patient.

d. The medical record shall contain sufficient information to justify the diagnosis and warrant the treatment.

e. The medical record shall contain, when appropriate, identification data, chief complaint, present illness, past history, family history, physical examination, provisional diagnosis, clinical laboratory reports, physician's orders, radiological reports, consultations, medical and surgical treatment, tissue reports, progress notes, care given, pertinent observations, final diagnosis, hospital dismissal summary, and autopsy findings.

f. Each clinical entry shall be signed or initialed by the attending physician who shall be properly identified in the record. Nursing notes and observations shall be signed by a registered nurse.

g. Records of maternity patients shall include history, and when appropriate, identification data; prenatal, labor, delivery, and hospital dismissal information; serological test for syphilis; Rh status; analgesia, and anesthesia.

h. Records of newborn infants shall be kept and shall contain the physician's signed report on the

physical condition of the infant at the time of birth, discharge notes, and other pertinent information.

i. The hospital shall prepare a properly completed birth certificate on every birth, obtain the attending physician's signature thereon, and forward the certificate to the local registrar of vital statistics.

j. On or before the fifth day of each month a complete list of births, deaths, and stillbirths occurring in the hospital during the preceding calendar month shall be reported to the State Department of Health with such information as the Department of Health requires. (Stillbirth means any conception the weight of which is in excess of 350 grams, irrespective of the duration of the pregnancy, which is not a live birth as defined in this act. K.S.A. 65-2401.)

k. The hospital shall furnish to the appropriate authority all reasonably available information on deceased patients which is necessary for completion of a proper death certificate.

l. Completion of the medical record shall be the responsibility of the attending physician.

m. Statistical data, administrative records, and records of reportable diseases as required by the State Department of Health shall be maintained and submitted by the hospital to the department as requested.

n. Adequate space, facilities, and equipment shall be provided for completion and storage of medical records.

o. Medical records shall be indexed according to diagnosis, operation, and physician.

p. Qualified personnel adequate to supervise and conduct the department shall be provided. If a professionally qualified registered record librarian is not in charge of medical records, a qualified registered record librarian or accredited record technician, on a consulting basis, shall organize the department, train the regular personnel, and make periodic visits to the hospital to evaluate the records and the operation of the department.

q. Nothing in these regulations shall be construed to prohibit the use of properly automated medical records, or use of other automated techniques, provided the regulations stated herein are met. (Authorized by K.S.A. 65-431; effective January 1, 1969.)

Bookshelf

(Continued from page 445)

Remnick, Herbert. Embryology of the face and oral cavity. Rutherford, N. J., Fairleigh Dickinson University Press, 1970.

Ross, Milton S. Skin health and beauty. New York, Funk & Wagnalls, 1969.

Smith, David E. The new social drug; cultural, medical, and new legal perspectives on marijuana. Englewood Cliffs, N. J., Prentice-Hall, 1970.

Woman's Auxiliary

(Continued from page 449)

Everyone had a fine time, or had you already figured that out? We sure did, but now we have to wind up our report and start to pack our suitcases and set out the box of cornflakes again, because it's time for the National Fall Conference in Chicago. Providing we all have the willpower to come back from that rip roarin', toddlin' town, we'll tell you about it next time. . . .

We know, we know . . . "You auxiliary women are always running around somewhere. . . ." But that's why you love us, isn't it? 'Bye now. . . .

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

Elizabeth B. Barker, M.D.
4000 Somerset Drive
Shawnee Mission, Kansas
66208

Thad H. Billingsley, M.D.
75 Bullard Loop
Fort Leavenworth, Kansas
66027

Oscar H. Bolch, Jr., M.D.
5000 W. 57th Terrace
Shawnee Mission, Kansas
66205

Maurice R. Cashman, Jr.,
M.D.
204 Medical Arts Building
Topeka, Kansas 66604

Carlos A. Dujovne, M.D.
9107 Robinson
Shawnee Mission, Kansas
66212

Harold L. Esrig, D.O.
7535 Briar
Prairie Village, Kansas
66208

Cedric B. Fortune, M.D.
540 E. Santa Fe
Olathe, Kansas 66061

A. Eugene Grossman,
M.D.
6809 Antioch
Overland Park, Kansas
66204

Jacquelyne Holdcraft,
M.D.
K. U. Medical Center
Kansas City, Kansas
66103

Theodore M. Hylwa,
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CHESTER M. NELSON, M.D.

Dr. Chester Nelson, Oberlin, died at the Decatur County Hospital on August 9, 1970. He was 69 years old.

Dr. Nelson was born in Kearney County, Nebraska, on September 29, 1900. He received his medical degree from the University of Colorado School of Medicine in 1928 and moved to Oberlin from Holdrege, Nebraska, in 1936.

Dr. Nelson is survived by his wife.

Memorial gifts to a scholarship fund for medical students may be made at either Oberlin bank.

ELDDEN J. TEETER, M.D.

Dr. Eldden J. Teeter, 76, Goodland, died in Denver on September 20, 1970.

Dr. Teeter was born at South Bend, Indiana, on August 15, 1894. He graduated from the University of Michigan School of Medicine in 1928. He had been a resident of Goodland since 1949, moving there from Cleveland, Ohio, to establish his practice.

A memorial fund has been established at the First National Bank and the Goodland State Bank, with funds to be used at the Northwest Kansas Medical Center.

D. JACK TILLER, M.D.

Dr. Jack Tiller, 54, Wichita, died in the crash of his plane east of Yellowstone Park, Wyoming, on August 22, 1970. His wife and two other members of his family were also killed in the crash.

Dr. Tiller was born at Alliance, Nebraska, on August 31, 1916. He received his Doctor of Medicine degree from the University of Kansas School of Medicine in 1940, and had been in surgical practice in Wichita since 1942.

Surviving Dr. and Mrs. Tiller is a son.

ROGER K. WALLACE, M.D.

Dr. Roger Wallace, 48, died at St. Mary Hospital in Manhattan on September 25, 1970.

Dr. Wallace was born April 10, 1922, in Edgemont, South Dakota. He received his medical degree from the University of Nebraska School of Medicine in 1946 and had been a radiologist in Manhattan since 1954.

Survivors include his wife, three sons and two daughters.

A memorial fund for the First Lutheran Church, Manhattan, has been established in Dr. Wallace's name.

JOHN I. WALLER, M.D.

Dr. John Waller, 60, died on September 27, 1970, at his home in Halstead.

He was born October 6, 1909, at New Castle, Indiana. He was graduated from the University of Indiana School of Medicine in 1933 and came to Halstead in 1950. He was chief of the urology department of the Hertzler Clinic and Halstead Hospital.

Surviving Dr. Waller are his wife and two daughters.

A memorial fund for Project Hope has been established at the Halstead Bank.

The obituary of Dr. James E. Henshall, printed in the October issue, stated that he retired from practice in 1964. According to a letter received from Dr. Henshall's son, he did not retire until June 1970.

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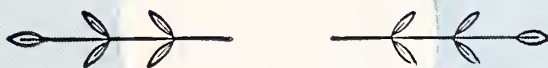
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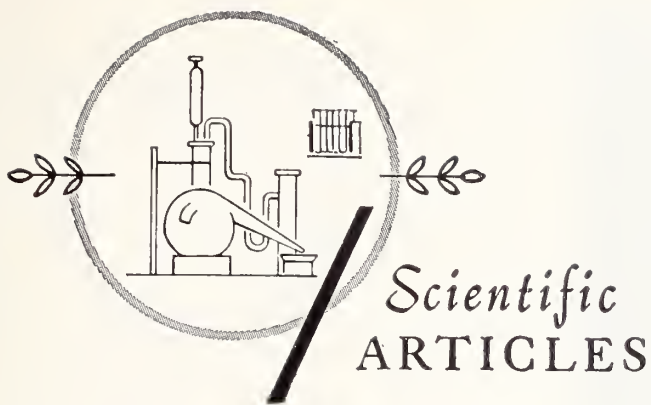
DECEMBER
1970



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*Merry Christmas—
Best Wishes for the New Year*





Abdominal Aortic Aneurysm Associated With Horseshoe Kidney

WILFORD D. HOOVER, M.D.,* *Halstead*

AN ABDOMINAL aortic aneurysm associated with a horseshoe kidney is an unusual lesion. Horseshoe kidneys have marked variability in their vascular supply, making it important that the surgeon be aware of this possibility prior to operative correction of the aneurysm. Due to abnormal configuration and poor drainage, these kidneys are frequently damaged by stones, obstruction and infections.¹ The preservation of all available renal tissue may be necessary for survival. A review of the literature²⁻⁹ reveals eight reported cases, and in none of these was renal artery reimplantation accomplished.

Case Report

A 59-year-old white male was admitted to the Halstead Hospital complaining of dysuria and hematuria. He had a past history of angina pectoris, and frequent urinary infections. The physical examination revealed an abdominal aortic aneurysm and prostatic tenderness. Intravenous pyelography and retrograde pyelograms demonstrated marked deviation of the ureters by the aneurysm and the renal configuration indicative of a horseshoe kidney (*Figure 1*). Lateral abdominal x-rays confirmed the aneurysmal dilatation of the aorta. Ra-

dioisotope renal scan failed to demonstrate the horseshoe kidney. The preoperative blood urea nitrogen was elevated to 41 milligram per cent.

Laparotomy revealed aneurysms of the common

Renal function is usually poor in older patients with a horseshoe kidney. These kidneys frequently have an anomalous vascular supply and when they are associated with an aortic aneurysm preservation of adequate renal function may require renal vessel transplantation. An awareness of these anomalies before resection is essential.

and internal iliac arteries as well as of the terminal aorta. The inferior mesenteric artery arose from a secondary proximal aneurysm of the aorta. The artery to the left half of the horseshoe kidney arose from the central portion of the aneurysm. The origin of the right renal artery was adjacent to the superior mesenteric vessel (*Figure 2*).

Mobilization of the horseshoe kidney was accomplished by division of the isthmus. After the aneurysms were mobilized, the internal iliac arteries were ligated, the aorta and external iliac arteries clamped, and the aneurysms quickly excised, preserving a cuff of aorta around the left renal artery orifice. Local left renal hypothermia

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Figure 1. Preoperative retrograde pyelogram demonstrating marked deviation of the ureters by the aortic aneurysm and the configuration usually associated with horseshoe kidney.

with external and intra-arterial cold Ringer's lactate solution was used throughout the period of vascular occlusion (58 minutes). The left renal artery was anastomosed to the side of the dacron bifurcation prosthesis. The postoperative course was uneventful, and follow-up intravenous pyelograms demonstrate excellent left renal function (Figure 3).

Comment

With the increase in life span and its attendant arteriosclerosis, it is expected that aneurysms associated with horseshoe kidneys will be seen with increasing frequency. Since these kidneys are more prone to preoperative damage than the average kidney, the necessity to preserve functioning renal tissue is more acute. These circumstances require the vascular surgeon to be aware of the frequent vessel anomalies attendant with the horseshoe kidney, and for him to be prepared to reimplant renal vessels arising from aneurysms. Papin¹⁰ evaluated 139 cases of horseshoe kidney and found 29 per cent had an artery to each renal half and one to the isthmus. Most (53 per cent) had multiple vessels to each half, some arising as low as the common iliac arteries. The "normal" arrangement was seen in only 18 per cent of the cases.

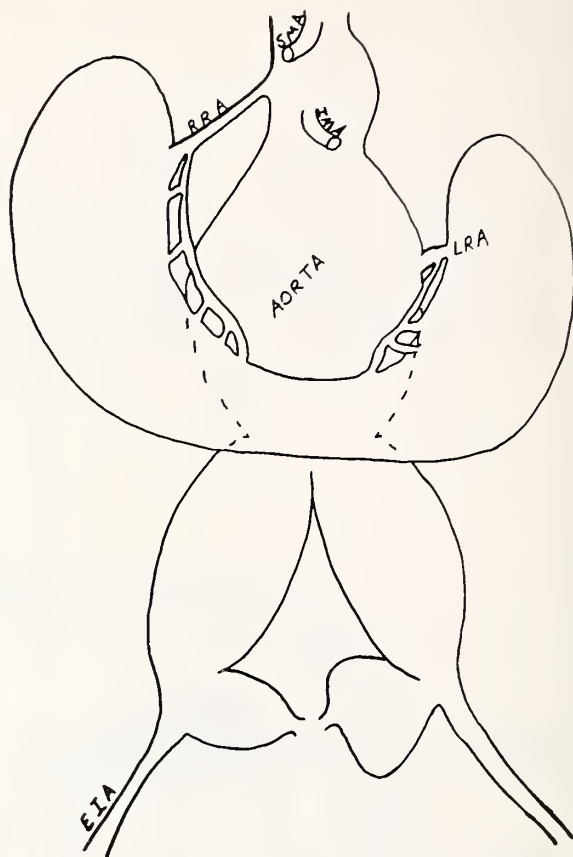


Figure 2. Artist's drawing depicting operative findings. SMA—superior mesenteric artery; IMA—inferior mesenteric artery; RRA—right renal artery; LRA—left renal artery; EIA—external iliac artery.



Figure 3. Postoperative intravenous pyelograms demonstrating excellent renal function.

TABLE 1
TABULATION OF REPORTED CASES OF AORTIC ANEURYSM AND HORSESHOE KIDNEY

Author	Year	Number of Renal Arteries	Origin	Procedure	Results
Julian ²	1956	Multiple	Aneurysm	Exploratory	Unknown
Killen ³	1968	3	Aorta	Aneurysmectomy	Survival
Lynn ⁴	1965	2	Aorta	Aneurysmectomy	Survival
			Aneurysm	Excision left kidney	
Mannic ⁵	1964	Unknown	Aorta	Aneurysmectomy	Survival
Minken ⁶	1967	2	Aorta	Aneurysmectomy	Survival
Phelan ⁷	1957	2	Aorta	Aneurysmectomy	Survival
Szilagyi ⁸	1959	2	Aorta	Aneurysmectomy	Survival
Wilder ⁹	1963	3	Aorta	Aneurysmectomy	Survival
Hoofer	1968	2	Aorta	Aneurysmectomy	Survival
			Aneurysm	Reimplantation left renal artery	

Aneurysmectomy was not performed in one of the eight reported cases due to origin of multiple vessels from the lesion,³ while in another, sacrifice of the left half of the horseshoe kidney was required due to arterial origin from the aneurysm⁴ (Table 1).

Renal damage in the present case is evident by an elevated blood urea nitrogen. The radioactive isotope scan poorly demonstrated the renal configuration, probably due to poor vascular supply from the aneurysm. Postoperative intravenous pyelograms demonstrate excellent renal function. The blood urea nitrogen has returned to a normal value.

References

1. Campbell, M. F.: *Urology*, 2nd ed., vol. 2, p. 1575, Philadelphia: W. B. Saunders Co., 1963.
2. Julian, O. C.: Diagnosis in arterial disease, *Surg. Clin. N. Amer.* 36:177-192, February, 1956.
3. Killen, D. A.; Scott, H. S., Jr.; and Rhamy, R. K.: Aneurysm and arterial occlusive disease of the abdominal aorta and its major branches associated with horseshoe kidney, *Amer. J. Surg.* 116:920-924, December, 1968.
4. Lynn, R. B., and Bruce, A. W.: An abdominal aortic aneurysm associated with a horseshoe kidney, *Canad. Med. A.J.* 93:979-980, October 30, 1965.
5. Mannick, J. A.; Brooks, J. W.; Bosher, L. J., Jr.; and Hume, D. M.: Ruptured aneurysms of the abdominal aorta, *New. Eng. J. Med.* 271:915-220, October 29, 1964.
6. Minken, S. L., and Rob, C. G.: Abdominal aneurysm and horseshoe kidney: A case report and collective review, *Surgery* 61:719-722, May, 1967.
7. Phelan, J. T., Bernatz, P. E., and DeWeerd, J. H.: Abdominal aortic aneurysm associated with a horseshoe kidney: Report of a case, *Proc. Mayo Clin.* 32:77-78, February 20, 1957.

8. Szilagyi, D. E.; Smith, R. F.; and Whitcomb, J.: The kidneys in surgery of the abdominal aorta, *Arch. Surg.* 79:256-268, August, 1959.
9. Wilder, J. R.; Koch, J. M.; and Stein, A.: Abdominal aortic aneurysm in association with horseshoe kidney, *JAMA* 183:1038-1040, March 23, 1963.
10. Papin, E.: Cited by Killen, Scott, and Rhamy³ (*Assoc. franc d' Urologie*, 22nd Congress, Paris, October 22, 1922, p. 557).

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Granulomatous Polyarteritis

Wegener's Granulomatosis "Limited Form"

PEDRO A. IGLESIAS, M.D.;* SAMUEL ZELMAN, M.D.;† and
RAMON A. GUILLAN, M.D.,‡ *Topeka*

WEGENER'S GRANULOMATOSIS^{1, 2} is uncommon and suggests a variant of polyarteritis associated with granulomatous inflammation. It is characterized by a constant triad: (1) necrotizing giant cell granulomatosis of the upper respiratory tract and lungs; (2) widespread necrotizing vasculitis of small arteries and veins; and (3) focal glomerulitis. Though the etiology and pathogenesis remain unknown, a relationship is suggested with Loeffler's syndrome as the most benign form and "allergic granuloma" which occupies an intermediate position.

In 1966 Arrington and Liebow³ reported 16 cases of Wegener's granulomatosis with characteristic pulmonary lesions, but absent or limited lesions elsewhere and without evidence of glomerulitis. These cases were often confused with neoplastic diseases or infectious granulomas and, even after biopsy, with lymphomas. The authors defined these cases as "limited forms of angiitis and granulomatosis of Wegener's type."

We have had the opportunity recently to study a case of this limited type.

History

The patient was referred on August 11, 1969, with the diagnosis of Wegener's granuloma (granulomatous polyarteritis).

He had been hospitalized elsewhere in February, 1969.

This 36-year-old man became ill in September, 1968, when he developed arthralgia without visible arthritis, with swelling of the lower legs. This continued for a few weeks and he then had fever. He went to a hospital and had biopsy of his muscle and of the axillary lymph gland, was told he had a collagen disease, and was placed on corticosteroids. Forty days later he felt much better and returned home. He began then to have a low grade fever. He had stopped his steroids in the meantime. He developed subcutaneous nodules in the left calf in Feb-

ruary or March of 1969. The local doctor did a biopsy and diagnosis was then made of Hodgkin's disease or lymphoma in a different hospital.

He was seen two weeks prior to admission and had developed a cough. Chest x-ray two weeks before admission was grossly abnormal with cavitating nodule and multiple cotton ball lesions all over the chest.

He was admitted to another hospital for further medical work. His physical examination at this time showed a well-developed, well-nourished, alert, cooperative, healthy appearing male of about 36 years. Examination of the head, face and neck was entirely normal. No lymph glands were felt. The chest was clear throughout. No rales or moisture were detected. The heart sounds were normal, the abdomen revealed no palpable liver, kidneys or spleen; no mass, tenderness nor rigidity were discovered. Genitals were normal. Rectal examination was normal. Extremities were normal except that on the left calf on the outer side there was a necrotizing lesion at the site of a biopsy. This was about one inch in diameter and was purulent and necrotic with a black eschar.

Multiple cultures of sputum were negative for fungi and tuberculosis. Skin tests were negative for all known acid fast bacilli and fungi. Tuberculin skin test was negative in second strength. Chest x-ray did not change until he had a thoracotomy, at which time a biopsy was made of the lung. This was reported as showing granulomatous lesion, probably due to vasculitis. He was subjected to further cultures of bone marrow, liver, lung, sputum, all of which were negative.

He became febrile and was again placed on a higher dosage of steroids, at which time he improved somewhat. He had no fever for the last three days prior to discharge. At the time of discharge, daily doses of 20 milligrams of prednisone and Maalox were prescribed.

Biopsies of nodules which appeared in the leg showed necrotizing vasculitis. Peripheral blood smears were normal and culture negative.

The patient was dismissed in May, 1969, for further care and observation by his local medical doctor.

FINAL DIAGNOSIS: Wegener's granuloma (granulomatous polyarteritis).

* Staff Physician, Medical Service, V. A. Hospital, Topeka. Former professor of internal medicine, University of Havana, School of Medicine.

† Chief, Medical Service, V. A. Hospital, Topeka. Lecturer in internal medicine, University of Kansas School of Medicine.

‡ Chief, Laboratory Service, V. A. Hospital, Topeka.

Terminal Hospitalization

In August, 1969, the patient developed increasing dyspnea, productive cough, and recurrent fever, and was admitted to another hospital. He was taking regularly prednisone 20 milligrams four times a day and chlorambucil 8 milligrams daily.

The rounded moon face of therapeutic Cushingism was present. Palpation over the paranasal sinuses elicited no points of tenderness, and the patient denied any epistaxis or nasal drainage at any time during the past year of his illness. The pharynx was not ulcerated. A right thoracotomy scar was present. Slight wheezing and moist rales were heard in both lower lungs, more marked on the right side. The pulse was regular at 104 per minute, the blood pressure 140/100. The abdomen was flat and soft. The liver was not palpable but the right hypochondrium was slightly tender to deep palpation. A necrotizing ulcer (*Figure 1*) on the outer aspect of the right upper thigh had followed the biopsy performed in May.



Figure 1. Necrotizing ulcer of upper right thigh which followed biopsy of nodules in this area.

Amyotrophy in both legs was more marked on the left side, but the tendon reflexes were present. The Babinski reflexes were negative, and there was no paresthesia. There was no lymphadenopathy. Temperature around 102° and tachycardia were present.

Urinalysis was normal, showing no proteinuria, cells or casts, and a specific gravity of 1.015. The leukocyte count was 6,500 per cubic millimeter, with normal differential count. The hematocrit was 45 per cent; hemoglobin 14.6 grams per cent; reticulocyte count 1.8 per cent; platelets 196,000 per cubic millimeter; sedimentation rate 45 millimeter per hour.

Sputum culture grew alpha streptococci; blood culture was negative for aerobic and anaerobic bacteria. Bleeding and clotting times and the clot retraction were normal. Blood urea nitrogen was 15 milligram per cent; serum creatinine 1.2 milligram; serum alkaline phosphatase and electrolytes were normal. The total serum protein was 7.1 grams, the albumin fraction 3.2 grams per cent. Paper electrophoresis of the serum proteins showed albumin decreased to 42.2 per cent and alpha 2 globulin increased to 17.9 per cent with borderline gammaglobulin of 20.6 per cent. On immunoelectrophoresis, serum IgA and IgG were normal, IgM slightly increased but of normal configuration. The serum thymol turbidity was increased to 6.8 units, the cephalin flocculation negative.

The chest x-ray film taken on admission showed bilateral, thin-walled, ring-like cavities, measuring up to 6 centimeters in diameter, bilateral, small, ill-defined nodular densities, and two large, confluent areas of pneumonic consolidation or infarction on the right (*Figure 2*). There was marked mucosal hypertrophy in both maxillary antra (*Figure 3*). These radiologic lesions were judged compatible with Wegener's granulomatosis.

An unsuccessful attempt was made to convert the patient to 48-hour corticosteroid therapy, because of his obvious susceptibility to overwhelming secondary infection while receiving prednisone 80 milligrams daily in divided doses. Chlorambucil was maintained, and later azathioprine added, as the patient deterio-



Figure 2. Chest x-ray on admission August 12, 1969: bilateral, thin wall, ring-like cavities, measuring up to 6 centimeters in diameter; bilateral, small, ill-defined nodular densities and two large confluent areas of consolidation on the right.



Figure 3. Antra-marked mucosal hypertrophy (the only upper respiratory tract manifestation).

rated. Antibiotic therapy was maintained as prophylaxis against secondary infection. Intermittent high temperature 102° to 104° with chills appeared on August 19. Several blood cultures were negative for aerobic and anaerobic bacteria. Antibiotic substitutions yielded no results.

The radiologic densities of the right lower lung rapidly extended and cavitated over a two week period. Pleural effusion and slight pneumothorax developed. New infiltrates and confluent opacities developed in both upper lobes during the third hospital week, and progression of the lung lesions continued until death after seven weeks of hospitalization.

A papulovesicular skin lesion of the thorax which appeared in the third hospital week showed necrotizing arteritis on biopsy (Figure 4a, 4b). Although the serum alkaline phosphatase early became and remained elevated moderately, there was no azotemia at any time during hospitalization, and serum bilirubin values remained normal. Late in the hospital course, the serum electrophoretic pattern was unchanged except for a falling albumin fraction, and the serum immunoelectrophoresis appeared normal. Pancytopenia was moderate but progressive. Death occurred suddenly, presumably of cardiac arrest, in a patient exhausted by hectic fever and increasing pulmonary insufficiency. The duration of illness had been exactly one year.

Autopsy Findings

The body was that of a well-developed, 36-year-old, white male, showing numerous petechiae and ec-

chymoses as well as ulcerations throughout the right buttock measuring 7 centimeters in diameter. The heart weighed 300 grams. The posterior wall of the left ventricle showed a large, firm, raised lesion measuring 3 x 2 centimeters. Sections of this area disclosed infiltration deep into the myocardial parenchyma. The left lung weighed 810 grams and the right lung weighed 1,130 grams. Both lungs disclosed numerous nodularities of varying sizes, the largest one measuring 6 centimeters in diameter and

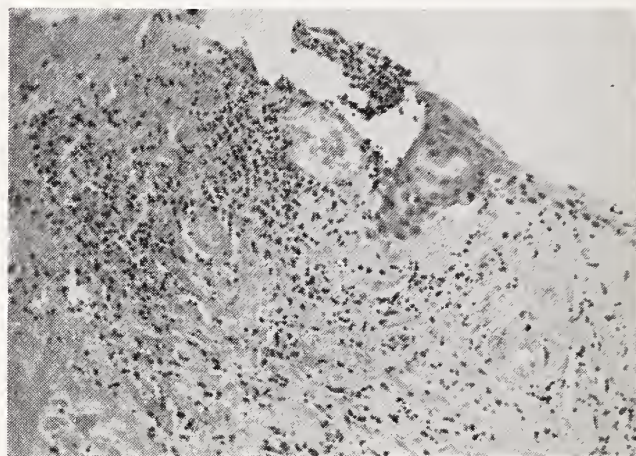
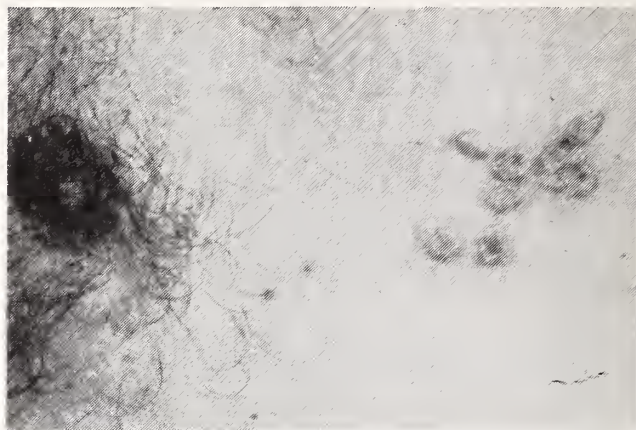


Figure 4. (a and b) Skin lesion of left lateral thorax: (a) papulovesicular eruption which appeared despite Imuran, prednisolone and ACTH therapy; (b) necrotizing arteritis.

the smallest one measuring 1 x 1.5 centimeters. A large cavitation, localized to the lower lobe of the left lung, was filled with a reddish, watery, hemorrhagic material (Figure 5). The surrounding lung parenchyma showed extensive areas of consolidation, reddish-brown in color. Examination of the liver revealed a small granulomatous lesion localized to the right lobe, measuring 3.5 centimeters (Figure 6). The area was yellowish and soft.

Examination of the kidneys showed a solitary lesion localized to the left kidney, measuring 1 centimeter in diameter (Figure 7). Sections of this kidney revealed infiltration of the cortex with secondary

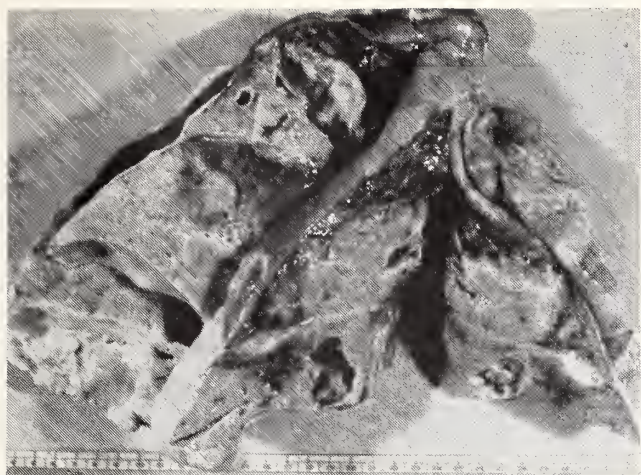


Figure 5. Diffuse granulomatous infiltration and cavitation of left lung.

blurring of the cortical medullary junctions. The right kidney was not remarkable. The urinary bladder disclosed a large mass infiltrating the anterior wall, measuring 6 centimeters in diameter. This area was yellowish-orange and showed extensive necroses.

Microscopic study of the kidneys showed obliteration of the parenchyma by an interstitial infiltrate made up of lymphocytes, mononuclear cells, atypical reticulum cells, and occasional eosinophils and neutrophils. One of the sections showed a large granulomatous reaction with an extensive area of necrosis. Surrounding the area of necrosis was a moderate reactive connective tissue infiltrated with lymphocytes. Generally, the glomerular tuft capillaries are well-preserved, with occasional exception mainly localized in the midst of the extensive infiltrates, showing focal necrotizing glomerulitis. Moderate congestion was seen of all parenchymal blood vessels. Occasional blood vessels localized in the midst of the extensive infiltrates showed necrotizing arteritis (Figure 8).

Microscopic examination of other involved organs (heart, lung, liver, bladder) disclosed diffuse granulomatous lesions characterized by extensive areas of necrosis surrounded by reactive connective tissue, in instances infiltrated with lymphocytes and atypical

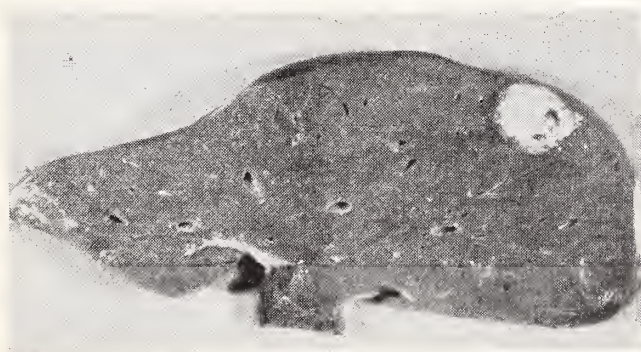


Figure 6. Granulomatous lesion of right lobe of liver.

reticulum cells, mononuclear cells, macrophages and a sprinkling of eosinophils and neutrophils. At the periphery of this granulomatous reaction, evidence of necrotizing vasculitis was clearly seen.

Microscopic examination of the adrenal glands disclosed evidence of atrophy. Microscopic examination



Figure 7. Solitary granulomatous lesion of left kidney.

of three of the parathyroid glands revealed evidence of hyperplasia. The rest of the autopsy examination, including the brain, mainly disclosed passive congestion.

Discussion

Except for the marked mucosal hypertrophy seen on radiograms of the paranasal antra, there were no manifestations of involvement of the upper respiratory tract in this case. In Walton's series of 56 cases, 38 showed such involvement.¹¹ Nor did our patient have eosinophilia, which was present in approximate-

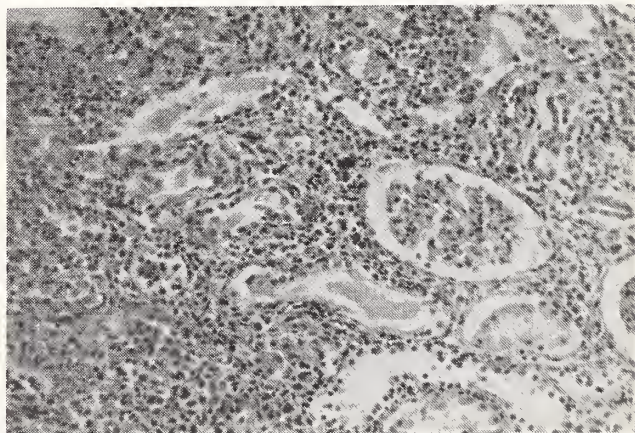


Figure 8. Microphotograph of kidney 120X shows diffuse interstitial infiltration with lymphocytes and atypical reticulum cells.

ly 45 per cent of Walton's cases with up to 80 per cent of the total leukocyte count. Skin involvement, reported in half the cases in most series, was present.

Involvement of peripheral nerves and skeletal

muscles in Wegener's granulomatosis was first reported by Drachman in 1963¹² and confirmed by other authors, *e.g.* Stern *et al.*⁹ In our patient, there was amyotrophy of both legs, more marked on the left side. However, severe diffuse necrotizing myopathy with weakness and wasting usually limited to the large muscles of the lower limbs has been reported in many patients treated with large doses of steroids¹⁴ and cannot be ruled out in this case.

Our patient never developed clinical evidence of renal involvement, but localized renal and bladder lesions were found at autopsy.

In March, 1969, at another hospital, a lymph node biopsy had been diagnosed as Hodgkin's disease or lymphoma. These slides were later submitted for interpretation to Dr. Averill A. Liebow³ who suggested that the lymph node biopsy could be classified as a "lymphomatoid" variant of Wegener's granulomatosis because of the striking proliferation of reticuloendothelial cells and the absence of glomerulitis in this case. Dr. Liebow considered that the patient's disease could be included among the "limited forms of angiitis and granulomatosis of Wegener's type."

In conclusion, the gross and microscopic picture was that of typical necrotizing vasculitis consistent with Wegener's granulomatosis, and the gross and microscopic examination of the left kidney disclosed extensive infiltrates even though during life the urine was normal and the blood chemistry failed to disclose an increase in urea and creatinine.

At the 1969 meeting of the American Association of Pathologists and Bacteriologists, Wegener's angiitis and granulomatosis was discussed as reported in *Cancer Seminar*, Volume Four, August 1969. About the "limited forms" Dr. Liebow stated:

(1) That in these forms of Wegener's granulomatosis the process may be confined to the lung, but may also involve the kidney in a focal manner without glomerulonephritis.

(2) That in the "lymphomatoid variant," the kidney also may contain infiltrates of bizarre cells with hyperchromatic nuclei and predominantly basophilic cytoplasm in active proliferation.

(3) That the disease may pursue a fulminant course, but in some patients appears to have responded to adrenal corticosteroids or azathioprine (Imuran) therapy, with remission for as long as 13 years, or possibly cure.

(4) That it is now evident that the limited form is much more common than the classical form of Wegener's granulomatosis, and that indeed it is not rare.

(5) That the condition may be entirely asymptomatic despite the presence of massive necrosis as seen in biopsy material.

(6) That as to etiology, nothing is known at

present. In most instances there is no evidence of dysproteinemia, a finding somewhat against an allergic pathogenesis. All efforts to demonstrate bacteria and fungi have failed. It is entirely possible, however, that the disease may be of viral etiology.

Taking account of the clinical picture, the lymph node biopsy, the biological tests and the pathological findings we believe that we can classify this patient's disease as Wegener's granulomatosis "Limited Form" which did not respond to the combined corticosteroid and immunosuppressive therapy.

References

1. Spencer: Pathology of the Lung, 1962, page 578.
2. Baum: Textbook of Pulmonary Diseases, 1965, page 346.
3. Arrington, Charles B., and Liebow, Averill A.: Limited forms of angiitis and granulomatosis of Wegener's type. *Am. J. Med.*, 1966, pages 497, 527.
4. Duperrat, B., Vermeure, P. et Louvier, M.: (Paris) —Forme cutanee de la Societe Francaise de Dermatologie et de Syphilographie. Volume 71, May/June 1964.
5. Reed *et al.*: The cutaneous manifestations in Wegener's granulomatosis. *Acta Dermato-Venereologica*, 1963.
6. Kraus, Vortel, Fingerland, Salivea and Korch: Unusual cutaneous manifestations in Wegener's granulomatosis. *Acta Dermato-Venereologica*, August 1965.
7. Bouronde, Smith and Cuppage: Dept. of Medicine and Pathology, Ohio State University, Columbus, Ohio. Treatment of Wegener's granulomatosis with Imuran. *Am. J. Med.*, June 1967.
8. Norton, Walter, Luki, Wadi and Strunk, Standley: Dallas, the University of Texas Southwestern Medical School. Combined corticosteroid and azathioprine (Imuran) therapy in two patients with Wegener's granulomatosis. *Arch. of Int. Med.*, June 1968.
9. Stern, Hofferland and Ulrich: London Hospital. The peripheral nerves and skeletal muscles in Wegener's granulomatosis. A clinical pathological study of four cases. *J. Neur.*, 1965.
10. *Cancer Seminar*, Volume Four, August 1969.
11. Walton, E. W.: Giant cell granuloma of the respiratory tract (Wegener's granulomatosis). *Brit. M. J.* 2 (5091):265-270, August 2, 1958.
12. Drachman, David A.: Neurological complications of Wegener's granulomatosis. *Arch. Neurol.* (Chicago) 8:145-155, February 1963.
13. Clinicopathologic Conference: Wegener's Granulomatosis. *Am. J. Med.* 48:496-502, April 1970.
14. Golding, Murray, Pearce and Thompson: Corticosteroid Myopathy. *Ann. Phy. Med.* 6:171-177 (Nov.) 1961.

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The Pill—Safe?

Clinical Evaluation of Oral Contraceptives

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ORAL CONTRACEPTIVES were licensed in the United States in 1960. In this decade they have been accepted as the most effective method of avoiding pregnancy. Women whose fertility undermined their health, economic status, and homes by repeated unwanted pregnancies, welcomed a product which was over 99 per cent effective in preventing pregnancies. The current Senate hearings have produced a great anxiety in the eight and one-half million American women who are taking the pill. Sensational headlines and inconclusive news reports have placed the physician in a difficult position where he must advise what is a safe course for the patient. Fortunately, the physician is, at this writing, able to give some definite answers as to what some of these dangers are. Nothing of any consequence is without risk. At the onset, we insert these statistics: the mortality related definitely to oral contraceptives is three per 100,000;^{12, 14} the mortality in pregnancy in the United States is 28 per 100,000; the mortality in riding in an automobile in this country is 25 per 100,000. Women whose condition does not warrant additional pregnancies are willing to accept such a risk.

The testimony reported from the hearings was largely unfavorable, stating that the patients have not been informed of the risks and that the patients do not give an informed consent. The hearings have not clarified what is known to be true or what is merely implication without proof. The patient must be given the facts as we know them, then let her decide what method of contraception she wants to use.

The physician, in order to clear himself, must give the patient the choice of contraceptive she wishes to use and point out the risks associated with it. Oral contraceptives have a risk of thromboembolic disease. Most authorities agree cancer is not a danger; in fact, the patient is so well regulated with an even supply of hormones, that there may prove to be less cancer in pill users.

The next method is the intrauterine device (IUD) with risk of perforation and less protection in preventing pregnancy. Other methods depend on the consistency with which they are used, but even with very careful attention to detail, unwanted pregnancies appear with all other methods.

We shall discuss only one method of pregnancy control, which will be oral contraceptives. We are presenting a more physiological plan for continuous oral contraceptive therapy. The dangers and the management of some common side effects are discussed, and also some weaknesses and dangers of certain plans of therapy which keep a patient on a progestogen hormone too long.

When the ovaries are functioning in their own physiological manner, they secrete estrogen during the first two weeks of the cycle. The estrogen hormone is the proliferative or growth hormone which stimulates the endometrium to build itself up and restore itself to a normal thickness. The last two weeks of the cycle, the ovaries secrete largely progesterone, with the secretion of a lesser amount of estrogen; the combined results in a secretory or progestational endometrium. Oral contraceptives utilize these same two hormones to prevent conception. Since estrogen and progesterone are natural in the normal cycle, efforts should be made to keep these hormones as physiological to the entire system as possible.

Oral contraceptive hormone tablets fall into two groups. The original tablets were a progesterone-like or a progestogen hormone. This hormone produces secretory glandular changes in the endometrium if it has been previously primed with estrogen. Almost all of the first contraceptive tablets used were in this progestogen group but they did contain a very small proportion of estrogen. With this hormone, the endometrial response became less and less and the periods lighter and lighter. To correct this, each progestogen tablet now has an increased amount of estrogen-like substance added in order to obtain more growth response in the endometrium. The major portion of each tablet, however, has progesterone action. The contraceptive tablets in this group include Enovid, Ovulen, Ovral, Provest, Ortho-Novum, Norinyl, Norlestrin and Demulen.

The second group of oral contraceptives is the sequential group. In the sequential group, all of the first 14 to 16 tablets are an estrogen-like hormone and the last five to six tablets are a combination estrogen-like and progesterone-like hormone. The predominant hormone, of the month, here is estrogen with a proliferative endometrial response and resulting in a more normal endome-

trial depth. The last five to six tablets, having the addition of progestogens to the estrogens, cause a secretory response in the endometrium to follow a healthy, active, proliferative phase. The contraceptive tablets in this group include Oracon, C-Quens, Ortho-Novum S.Q., and Norquen. *Table 1* gives the amount of hormone and the ratio of the hormones in each of the tablets.

The progestogen tablets act by suppressing ovulation.^{3, 6, 19} Another factor in making the hormone effective in preventing pregnancy is the suppression of the endometrium. The predominantly progesterone effect of these tablets produces an inhibited growth of the endometrium the first part of the cycle rather than normal proliferative growth. There is limited growth of the endometrium in response to the small amount of estrogen in each tablet, and in many women, the menstrual flow decreases to a very small amount. There may even be so much suppression of the endometrium and of the ovaries that after the tablets are discontinued there is a variable latent period with no menstrual flow at all. Such suppressive effects require a year or more, so attention should be

given to the plan of changing tablets every year or else discontinuing the tablets for three to four months after each year of medication. If the woman remains a number of years on progestogen tablets, she eventually has, in effect, a medical endometrial suppressant with no proliferative endometrial phase, making it difficult for her to establish her period again, and with having no complete menstrual cycle, making it difficult to become pregnant.

The sequential tablet came as a possible alternate to the progestogen group of tablets. Tyler and other groups^{13, 22} found that small doses of estrogen, if started early in the cycle and if given daily, will suppress ovulation. So, in the sequential method, estrogen-like hormone alone is given in the first 14 to 16 tablets. This produces a good proliferative endometrium. Then, combination of estrogen-like and progestogen hormone is given in the last five to six tablets to change to a secretory endometrium. A second factor in preventing pregnancy is that with only five to six days of secretory stimulation, withdrawal bleeding occurs in such a few days, that there are not sufficient days

TABLE 1

No. of Tablets	Brand Name	Progestogen	Progestogen mg/tab	Estrogen	Estrogen mg/tab	Ratio
1. 20	Provest	Medroxyprogesterone acetate	10 mg	Ethinyl estradiol	0.05 mg	100:1
2. 20	Enovid 5 mg	Norethynodrel	5 mg	Mestranol	0.075 mg	76:1
3. 20	Enovid E	Norethynodrel	2.5 mg	Mestranol	0.10 mg	25:1
4. 20	Norlestrin	Norethindrone acetate	2.5 mg	Ethinyl estradiol	0.05 mg	50:1
5. 20	Ortho-Novum	Norethindrone	2 mg	Mestranol	0.10 mg	20:1
6. 20	Norinyl	Norethindrone	2 mg	Mestranol	0.10 mg	20:1
7. 21	Ovulen & 28	Ethynodiol acetate	1 mg	Mestranol	0.10 mg	10:1
8. 21	Ovral	Norgestrel	0.5 mg	Ethinyl estradiol	0.05 mg	10:1
9. 21	Norinyl	Norethindrone	1 mg	Mestranol	0.05 mg	20:1
10. 21	Norlestrin & 28	Norethindrone	1 mg	Ethinyl estradiol	0.05 mg	20:1
11. 20	Ortho-Novum	Norethindrone	1 mg	Mestranol	0.05 mg	20:1
12. 28	Noriday	Norethindrone	1 mg	Mestranol	0.05 mg	20:1
13. 21	Ortho-Novum 1/80	Norethindrone	1 mg	Mestranol	0.08 mg	12:1
14. 21	Norinyl 1/80 & 28	Norethindrone	1 mg	Mestranol	0.08 mg	12:1
15. 21	Demulen	Ethynodiol diacetate	1 mg	Ethinyl estradiol	0.05 mg	20:1
16. 21	16			Ethinyl estradiol	0.10 mg	
	5 Oracon	Dimethisterone	25 mg	Ethinyl estradiol	0.10 mg	
17. 20	15			Mestranol	0.08 mg	
	5 C-Quens	Chlormadinone	2 mg	Mestranol	0.08 mg	
18. 20	14			Mestranol	0.08 mg	
	6 Norquen	Norethindrone	2 mg	Mestranol	0.08 mg	
19. 20	14			Mestranol	0.08 mg	
	6 Ortho-Novum S.Q.	Norethindrone	2 mg	Mestranol	0.08 mg	

of secretory endometrium for a fertilized ovum to implant itself in case ovulation had not been suppressed. With the sequential tablets there is more endometrial proliferation and therefore the menstrual flow becomes heavier and more normal. The endometrial phases resulting from sequential tablets, follows more nearly the pattern of the woman whose ovaries have no outside interference.

We recommend that oral contraceptives be alternated on a yearly basis. We give a year of the progestogen tablets, which keeps the predominately progesterone influence limited to a short enough time to avoid some undesirable side effects. After a year of progestogen the menstrual flow gradually decreases in most women, and by the end of the year there often appears some breakthrough bleeding, the uterus becomes slightly more enlarged and congested, on the cervix there begin to appear some nabothian cysts. These effects are all reversible when this hormone is discontinued, but they are also reversible when the hormone is changed to the sequential oral contraceptive. We therefore alternate to the sequential group the second year. With the influence of the predominately estrogen monthly therapy, the menstrual flow becomes heavier and more nearly normal; the cervical cysts disappear; the uterus becomes less congested; and the breakthrough bleeding corrects itself. By the end of the sequential year there may also be some breakthrough bleeding, also the menstrual flow may become heavier than normal. It is not necessary to remain on each alternate hormone an entire year. If the woman has been on a progestogen tablet only three months and wishes to change back to the sequential because of too light menstrual flow or some other side effect, we recommend that she change. We recommend, however, that each year they alternate to the other hormone for not less than three months or else discontinue oral contraceptives entirely for three months. There is no special benefit in going without pills; we would rather continue the therapy straight through. By continuing the therapy, the hormone has the one advantage of keeping the cycle regular and uninterrupted.

It is generally thought that the progestogen group has a better record in preventing pregnancy than the sequential group, but with certain precautions they are almost equally efficient. We give all our oral contraceptives on a four-week cycle, with three weeks of medication and one week without. This is much safer than starting the tablets on day five of the period, because the patient is never more than seven days without a pill. The other precaution is not to miss a sequential pill. If the sequential pill is missed and taken 24

hours late, it is recommended that an additional contraceptive be employed until the next period starts. Various investigators^{9, 15} have obtained excellent contraceptive records by a four-week schedule of the pill with three weeks medication and one week without, and also by close attention to not miss any tablet.

Side effects of oral contraceptives receive more publicity from year to year; Overstreet¹⁷ has listed 66 side effects. Side effects have decreased greatly because of a decrease in the size of the pill. Most side effects are not actually serious. There are, however, two possible effects which worry many people. Do oral contraceptives cause cancer, and do they cause blood clots?

Carcinogenic Effects

A symposium conducted by Wilson, Goldfarb, Kaufman, Kistner, and Beecham²³ all agree that estrogen is not carcinogenic in any amount prescribed to women. In fact, these authorities may prescribe them in fairly large doses. Taylor, *et al.*²¹ state that there is yet no valid evidence to support or refute a carcinogenic effect of oral contraceptives. Progestogens are associated with cystic cervicitis and also polypoid hyperplasia of the endocervical canal, both of which are evidence of hyperplasia. These changes in the cervix are reversible and not progressive when the progestogens are discontinued. Prolonged use of progestogens are to be avoided because of these possible changes in the cervix. If the progestogen tablet is alternated with a sequential year by year, hyperplastic changes disappear and the cervix is safe.

Rather than causing cancer of the endometrium, progestogens are now being used to help cure endometrial cancer. Kennedy,¹⁶ in treating carcinoma of the endometrium, has produced striking improvement using synthetic progestogens. The benefit is especially true in disseminated endometrial carcinoma and in those with lung metastases.

In the recent Senate hearings, estrogen has been implicated as a carcinogenic agent. This gives the public the impression that research on estrogen is in its initial stages. In 1917, Papanicolaou and Stockard¹⁸ introduced the study of hormones by examination of the vaginal smear. In 1923, Allen and Doisy² published their work on the use of estrogen hormones in mice, this research dating back to 1920. In 1927, Allen¹ extended their publication to effects of estrogen on monkeys. In 1941, Geist and Salmon¹⁰ published very extensive and thorough research study as to whether estrogen is carcinogenic to the human female, this study covering the years 1933 to 1938. Breast, cervical and endometrial biopsies were taken. They con-

cluded that it is impossible to administer to women the huge estrogen dosage over long periods, that would justify a comparison with the large estrogen dosage producing carcinoma in rodents. The safety of estrogen, therefore, was established 35 years ago.

Estrogen is the feminizing hormone present in all normal women and necessary for growth and development of the normal young female. Estrogen is present in the normal menstruating woman in large amounts with beneficial effects on her health and well-being. The millions of menopausal women on estrogen, over the past 35 years, give strong evidence of its safety in the usual small dosage. During these 35 years the usual dosage of estrogen has been accepted as 0.5 milligram to 1.25 milligram daily. No contraceptive tablet contains more than 0.1 milligram estrogen, making the present dosage very low by previous standards of safety. It is difficult to believe that with this new smaller dosage the danger of carcinoma or thromboembolism should suddenly appear.

Thromboembolic Accidents

The studies in thromboembolism in the United States have yielded less adverse effects than the British reports.¹¹ Five large studies^{5, 8, 20, 24, 25} regarding pulmonary embolism and thromboembolic disease show that this condition does occur in women on the pill, but also in women who never have taken the pill. The risk of death from thromboembolic disease among women using oral contraceptives is three per 100,000 users.^{12, 14} There is some increase in fibrinogen, prothrombin and Factor X of the coagulation system. Thromboembolic accidents in young women are most often related to pregnancy. However, they do not come as often during pregnancy as they do in the two-week postpartum period. Therefore, it may not be the high progesterone level of pregnancy, but rather the withdrawal of it with a change of venous velocity and pressure that is responsible for the accident.

Women who have varicose veins will have more pain during the first few days of the menstrual period and the week before the period, indicating some circulatory and pressure changes in the veins in the progesterone phase of the cycle. Women with varicosities will have less discomfort of the lower extremities during the year they are on the sequential hormone than on the year they are on the progestogen hormone. We believe that further research will eventually implicate progesterone rather than estrogen in the thromboembolic accidents. The British committee on the safety of drugs,⁴ recommends that the dosage of

estrogen be kept to 0.075 milligram or less daily as a coagulation precaution. This is now also recommended by the U. S. Food and Drug Administration.

Headaches

Headaches are commonly due to emotional strain, sinusitis, eye strain, and tiredness. Headaches may also be associated with oral contraceptives, and may become severe enough for the patient to stop the medication. Here, a change of tablets is often beneficial. This patient may have headaches from one brand of oral contraceptives but may not have headaches from any of the others. Many patients who have a headache at the same time of the cycle each month will get excellent relief by taking a diuretic three or four days before she expects the headache and continue the diuretic until the usual headache time has passed.

Hirsutism and Facial Pigmentation

Some women develop hirsutism during pregnancy with a tendency to continue to a lesser extent after pregnancy. Women who have any tendency toward facial hair growth should not be given the oral contraceptives having an androgenic effect. Norethindrone has an androgenic action, but given orally, a portion of it is converted into estrogen.⁷ However, if there is any tendency toward hirsutism it may be best to avoid the norethindrone group of tablets for such an individual. Biological properties are found in *Table 2*. During the summer months, we recommend the sequential tablet in women who develop excess facial pigmentation in the sun from a progestogen tablet. Estrogen does not produce pigmentation.

TABLE 2
BIOLOGICAL PROPERTIES OF
PROGESTOGENS

	<i>Estro- genic</i>	<i>Anti- estro- genic</i>	<i>Andro- genic</i>
Norethynodrel	+++	000	000
Enovid			
Norethindrone	000	+++	+++
Ortho-Novum			
Norinyl			
Norlestrin			
Norgestrel	000	+++	+
Ovral			
Ethinodiol diacetate ..	0	+++	000
Ovulen			

Breakthrough Bleeding

Breakthrough bleeding has been experienced by many women, but the best way to overcome this problem is to continue a regular four-week regime for three months more; usually it will correct itself. There has been much less breakthrough with the smaller 1 milligram tablet than there was when the larger dosage was in use. Sometimes it is beneficial to change from one progestogen tablet to another progestogen, or one may change from a progestogen tablet to a sequential tablet, or from a sequential to a progestogen tablet. Changing to another will solve this problem for most women.

Breast Soreness

Breast soreness is often found in women not on oral contraceptives and increases as progesterone phase approaches the menstrual period. The soreness improves during the estrogen phase. Women who had sore breasts before taking the tablets are the ones most likely to have soreness when taking progestogen oral contraceptives. If the soreness persists, this symptom can be solved by changing to a sequential tablet. We recommend that such patients receive a sequential tablet for nine months or a year, and then change to progestogen tablet only three months in order to change the tablet for the required rest time.

Nausea

Nausea occurs in about one third of all women on oral contraceptives. This symptom may be present for up to six days the first month, two to three days the second month, perhaps one day the third month and usually none beyond that. Very seldom is it necessary to change tablets on account of nausea. With the present day 1 milligram tablet, this complication becomes a very minor factor.

Summary

1. Oral contraceptives are by far the most effective method of avoiding pregnancy.

2. Oral contraceptives contain either estrogen or progesterone or both, but nothing else. These hormones are a part of the normal cyclic physiology.

3. A plan is outlined for alternating progestogen oral contraceptive tablets one year, to sequential (predominately estrogen) oral contraceptive tablets the next year.

4. By alternating a predominately progesterone year, with a predominately estrogen year, the physiology of the uterus and ovaries is disturbed much less than continuous progesterone therapy.

5. The progestogen tablets usually result in a gradually lighter menstrual flow. The sequential tablets usually increase the menstrual flow to a

normal amount, or slightly heavier than normal. This makes it possible to regulate those who flow too heavy or too light by more time on the proper tablet.

6. Most authorities agree that oral contraceptives are not carcinogenic. The experience of the medical profession with estrogen over the past 35 years is substantial evidence of its safety. Progestogen results in cystic hyperplasia of the cervical glands and hyperplasia of the endocervical epithelium. Its prolonged use is to be avoided.

7. Thromboembolic accidents have decreased by reducing the original 10 milligram progestogen tablet to the present dosage of 1 milligram or less. Progestogen may be implicated in embolic accidents, but one sees these accidents much more frequently in the immediate postpartum period of pregnancy. Estrogen, because of 35 years of clinical trial in daily dosages of 0.5 milligram to 1.25 milligram, may be a lesser factor in thromboembolism when used in daily amounts of 0.1 milligram or less.

8. We recommend that all oral contraceptives be a uniform 21-day schedule, providing a 28-day cycle.

9. We recommend the use of progestogen in daily dosage of 1 milligram or less and estrogen 0.075 milligram or less as recommended by the British committee of Drug Safety, and also the U. S. Food and Drug Administration.

10. Androgenic type tablets are to be avoided in patients with a tendency toward hirsutism or facial pigmentation.

11. The mortality due to thromboembolic accidents from contraceptive tablets is three per 100,000. Mortality due to pregnancy is 28 per 100,000, and mortality due to riding in an automobile is 25 per 100,000.

Addendum

The distribution of two oral contraceptives, Provest and C-Quens are being discontinued. The progestational components of these two products produced benign mammary nodules in beagle dogs. The dosage was 10 to 50 times the dosage ever used by women. The studies reveal that it is the progestational component which causes the nodules, not the estrogen component. These results lend support to the position we have taken that estrogen in small dosage is a natural and safe hormone to be used by women.

References

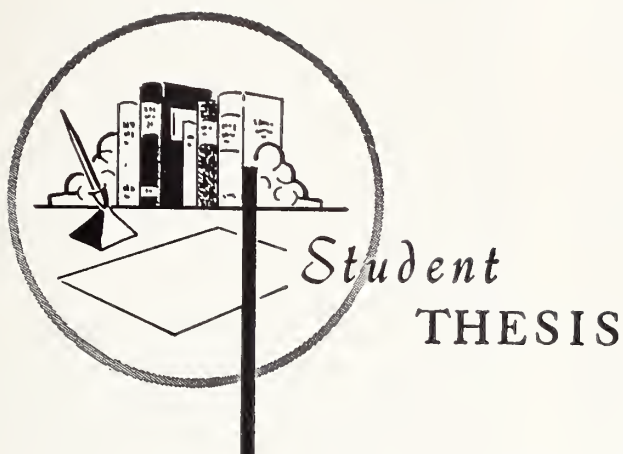
1. Allen, E.: Contributions to embr. No. 98. *Carnegie Institute of Washington Publications* 380: 19:1, 1927.
2. Allen, E. and Doisy, E. A.: Assaying follicular hormone. *JAMA*, 81:819, 1923.
3. Beecham, H. W.: Progestational agents in gynecologic disorders and pregnancy complications. *Ann. New York Acad. Sci.* 71:727, 1958.

4. British Commonwealth Drug Safety Report. *Brit. Med. J.*, April 25, 1970.
5. Cahol, D. A.: Oral contraceptives and thromboembolic episodes. *Lancet* 2:1013, 1965.
6. Diezfallusy, E.: Mode of action of contraceptive drugs. *Amer. J. Obst. & Gynec.* 100:136, 1968.
7. Edgren, R. A.; James, R. C., and Peterson, D. L.: Biological classification of progestational agents. *Fertil., Steril.* 18:238, 1967.
8. *FDA Report of oral contraceptives*. Washington, D. C. U. S. Gov't Printing Office, 1966.
9. Garcia, C., and Pincers, G.: Hormonal inhibition of ovulation. *Manual of Contraceptive Practice*. Williams & Wilkins, Baltimore, 1964.
10. Geist, S. H., and Salmon, U. J.: Are estrogens carcinogenic in human female. *Am. J. Obst. & Gynec.* 41:21, 1941.
11. Goldzieher, J. W.: Newer drugs in oral contraception. *Med. Clin. N. A.* 48:2, March, 1964.
12. Goodrich, F. W., Jr.: Anxiety. *Med. Opinion and Review*, April 1970.
13. Hester, J. L.; Kellett, W. W.; Spicer, S. S.; Williamson, H. D., and Pratt, Thomas H. R.: Action of sequential hormone in preventing pregnancy. *Amer. J. Obst. & Gynec.* 102:771, 1968.
14. Jennett, W. B., and Cross, J. N.: Influence of pregnancy and oral contraceptives on women in childbearing age. *Lancet* 1:1019, 1967.
15. Karrar, M. C., and Smith, E. R.: Two thousand women years experience with sequential contraceptives. *Amer. J. Obst. & Gynec.* 102:1029, 1968.
16. Kennedy, B. J.: Endometrial malignancy treated with progestogens. *Surg. Gynec. Obstet.* 127:103, 1968.
17. Overstreet, E. W.: *Ob-Gyn. News* 3:16 August 15, 1968.
18. Papanicolaou, G. N. and Stockard, C. R.: Vaginal smear technique. *Am. J. Anat.* 22:225, 1917.
19. Rudel, H. W. and Kucl, F. F.: Biology of anti-fertility steroids. *Acta Endocrin. Suppl.* 105:1966.
20. Searle, G. D.: Thromboembolic phenomena in women. Proceedings of a Conference, Chicago 1962.
21. Taylor, H. B.; Irey, M. S., and Norris, H.: Atypical endometrial hyperplasia in women taking oral contraceptives. *JAMA* 202:637, 1967.
22. Tyler, E. T.; Matsner, E. M.; Gotlib, M.; Levin, M.; Tucker, J. S., and Parratt, F. M.: Sequential approach to oral contraceptives. *JAMA* 197:943 September 19, 1966.
23. Wilson, R.; Goldfarb, A.; Kaufman, S.; Kirstner, R., and Beecham, C.: Estrogen replacement therapy and its metabolic effects. *Council for Interdisciplinary Medicine*, April 6, 1967.
24. World Health Organization: Clinical aspects of oral progestogens. Report W. H. O. Scientific Group, Geneva, 1966.
25. Wright, I. S.: Final Enovid report. *J. New Drugs* 3:201, 1963.

Kansas Chapter, The American College of Surgeons

The Kansas Chapter of the American College of Surgeons is becoming an active professional organization within this state. It is providing educational opportunities for the surgeons of Kansas by presenting scientific programs for its members. The organization is cooperating in several projects with the Kansas Medical Society. It is surgery's voice in all professional and economic problems involving the physician of this state. The Kansas Chapter of the American College of Surgeons is assisting Medical Services Advisory Committees in the preparation of guidelines and in advice to area peer review committees on surgical questions that cannot be locally resolved. The Kansas Chapter is participating with other specialty organizations in the revision of the Kansas Relative Value Studies and will be the predominant voice in amending the surgical section of this document.

The Kansas Chapter invites every Kansas physician who is a member of the American College of Surgeons to unite with his own state organization and to assist the surgeons of Kansas in providing the highest possible quality of care to the people of this state. If you belong to the American College and have not participated in the activities of the Kansas Chapter, you are most cordially invited to do so. Will you kindly contact Jack W. Graves, M.D., 3244 East Douglas, Wichita, Kansas 67208. You will individually benefit from this membership and your state professional organization needs your cooperation to improve its effectiveness.



Pulmonary Sarcoidosis: A Review of the Cases at the University of Kansas Medical Center

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SARCOIDOSIS, a granulomatous systemic disease of undetermined etiology, is a characteristic complex of radiographic manifestations associated with certain microscopic, laboratory, and clinical findings. Like syphilis, it has been called a "great imitator" of disease and may present itself in a variety of ways, the majority of which are respiratory. A concise definition of sarcoidosis is virtually impossible to formulate at the present time, since many crucial details about the nature and etiology of this disease are unknown. However, there are certain aspects of the disease which are well known and are easily recognized. It will be the purpose of this paper to review the cases of pulmonary sarcoidosis at the University of Kansas Medical Center. In doing so, a review of the recent literature will be included for comparison and factual information.

Method

The cases of pulmonary sarcoid at the University of Kansas Medical Center between the years 1950 and 1969 were collected by reviewing all patients' charts which were coded in medical records as either pul-

monary sarcoidosis or pulmonary granuloma, etiology undetermined. The majority of cases came from the former classification. There was a total of 45 cases. However, one patient later died and proved at autopsy to have malignant lymphoma.

This misdiagnosed case presented with many of the manifestations of sarcoid, a finding which is common among lymphomas and Hodgkin's disease. He was a 64-year-old white male who had been complaining of weakness, dyspnea, weight loss, and parotid and lacrimal swelling for several months duration. A peri-bronchial infiltrate had been present for at least one year as diagnosed by a chest x-ray. The patient had a 12 per cent eosinophilia, hyperglobulinemia, hypoalbuminemia, and negative skin testings with four different antigens of tuberculous and fungal origins. All sputum cultures were negative and there was no elevation of serum or urine calcium levels. A biopsy of his parotid gland was performed with a pathology report of Mikulicz's disease . . . suspect sarcoid. No treatment was instituted and he subsequently died. This proved to be the only case which was diagnosed incorrectly, but three of the cases in the rest of the study had either a superimposed tuberculous infection or developed intrathoracic tuberculosis upon their sarcoidosis.

Once the cases were gathered and examined, certain factual information was collected from each. This was separated and organized and is listed in the paper in the following section.

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Fisher recently completed his internship at St. Luke's Hospital, Kansas City, Missouri. He is now serving in the U. S. Navy, stationed in Japan.

Results

Of the possible 45 cases of proven and suspected pulmonary sarcoid, only 44 cases were included in the study, the incorrectly diagnosed case being deleted. Thirty-seven of these patients were proven cases of sarcoidosis as diagnosed by biopsy. The remaining seven patients are suspected of having pulmonary sarcoid, and either did not have a biopsy or did not have one which was diagnostic or compatible with the histological picture of sarcoid. Therefore, approximately 84 per cent of the total cases presented are proven sarcoid patients.

The age of the patients ranged between 20 and 67 years. Yet, the majority of patients, or 75 per cent, were between 20 and 50 years of age. The average age at the onset of symptoms or the discovery of an abnormal chest x-ray was 38.9 years; whereas, the average age at the time of diagnosis was 39.4 years. Thus, the symptoms or abnormal radiograph was present at least six months prior to the time of diagnosis and nothing can be stated for the length of time that the symptoms occurred after the onset of the illness.

As far as race and sex are concerned, 31 caucasion and 13 negroid patients were involved in the study. Among the whites, 17 were female and 14 were male. Of the 13 Negroes, only one patient was a male, the other 12 being females.

The patients presented themselves to the hospital for various reasons. Thirty-six per cent were admitted because of an abnormal x-ray only. Fifty-nine per cent had respiratory symptoms of one kind or another. Only 5 per cent presented because of other problems: one due to ocular sarcoid and one due to arthritis secondary to the granulomatous process going on. A breakdown of the symptoms of the patients is presented below:

Cough	24/44 or 55%
Dyspnea	21/44 or 48%
Weakness and fatigue	11/44 or 25%
Chest pain	10/44 or 23%
Weight loss	8/44 or 18%
No complaints	7/44 or 16%

Other less common symptoms included arthritis, hemoptysis, enlarged exocrine glands, ocular lesions, skin lesions, fever and chills, and nonrelated complaints.

Each patient had a physical examination, but, surprisingly, 45 per cent of the patients showed no physical abnormality. Thirty-four per cent of the patients had scattered rales and rhonchi; 30 per cent had palpable lymph nodes; 7 per cent had skin lesions; 5 per cent of the patients had auscultatory findings consistent with pulmonary hypertension; 2

per cent had enlarged parotid glands, and 2 per cent had wheezes.

Laboratory results were also included. Forty-eight per cent of the patients had an eosinophilia of 5 per cent or greater. Surprisingly, not one of the 40 tested for an abnormal calcium metabolism had an elevated serum calcium level; and none of the five who had their urinary calcium level checked were positive. Skin tests were variable. Eleven per cent of the patients had positive tuberculin skin tests. However, 7 per cent of the patients had positive histoplasmosis skin tests. Twenty-three per cent of the 13 patients tested with mumps antigen had a positive reaction. The rest of the skin tests, which included those for blastomycosis, coccidiomycosis, atypical mycobacterium, trichophyton, and candida were negative. Two of the patients who were known to have had previous positive reactions to a skin test reacted negatively at this time of evaluation. One was for histoplasmosis and the other was for mumps antigen. Of the cultures taken on 39 of the patients for acid-fast bacteria, three were positive, but one was for atypical mycobacteria. This culture was made directly from an excised lymph node from the chest. The one attempted Kveim test was reported negative in a patient known to have sarcoidosis.

Protein electrophoresis of the patients' serum showed that 14 of the 29 tested had a hypergammaglobulinemia, the great majority being stage II and stage III patients; two of 29 tested had an increased globulin other than gamma, one alpha one and the other beta; and nine of the 29 tested had a hypoalbuminemia. Total protein and A/G determinations were done on 13 patients. Five had increased globulin and decreased albumin contents. Therefore, at least 33 per cent had a hypoalbuminemia and 45 per cent of the patients tested had a hyperglobulinemia.

In trying to make an association between tuberculosis and pulmonary sarcoid, the following statistics were gathered. Five of the 44 patients had a close relative with known tuberculosis. Six of the 44 patients were hospitalized in a tuberculosis sanitarium for definitive diagnosis. Or, in summary, nine of the 44 patients, or 20 per cent, either had a tuberculous relative or was institutionalized in a tuberculosis hospital. Interestingly, three of the 44 sarcoid patients either had tuberculosis or developed it, one with a positive culture of atypical mycobacteria.

For a case to be proven sarcoid, one biopsy specimen must have been histologically compatible with the diagnosis. Thirty-seven of the 44 patients had a positive biopsy. Twenty out of 37 patients had a positive open lung biopsy; eight out of 37 had a positive scalene node biopsy; six out of 37 had a positive supraclavicular node biopsy; three out of 37 had a

positive hilar node biopsy; two out of 37 had positive cervical node and skin biopsies; and one out of 37 had a positive pericardial and bone marrow biopsy. In the series of 37 histologically proven sarcoid, three bronchoscopes, two scalene node biopsies, one liver biopsy, and one bone marrow biopsy were negative. Of the seven suspected sarcoid patients, three of them had attempts at biopsy, including one open lung biopsy, one parotid biopsy, one liver biopsy, one bone marrow biopsy, two lymph node biopsies, and two bronchoscopes, all of which were negative at that time.

Evidence of sarcoid involvement outside of the chest was apparent. Although all 44 cases had intrathoracic involvement, only 18 out of 44 had obviously diseased lymph nodes. Three of 44 patients had sarcoid skin lesions. Three had evidence of myocardial involvement manifested by arrhythmias and conduction defects. Two of the patients had ocular sarcoid. Two had bone destruction characteristic of sarcoid. One had involvement of his parotid glands and one of his liver, manifested by deranged liver function tests. Two cases presented with arthritis, but had no rash or bilateral hilar adenopathy consistent with the bilateral hilar adenopathy syndrome.

Chest x-rays were taken of all patients, and each case was staged according to the radiologist's findings. Stage I was characterized by hilar or mediastinal adenopathy. Stage II was manifested by miliary or nodular pulmonary parenchymal mottling with or without hilar prominence. And, stage III consisted of pulmonary mottling with fibrosis and pulmonary degenerative changes such as emphysema or bullae. Using this classification, only five of the 44 patients presented as state I and seven of the 44 patients had progressed to stage III. The remainder of the patients, 32 out of 44, were stage II.

The intrathoracic changes seen on x-ray were highly variable, but somewhat consistent, depending upon the stage of the disease as seen by x-ray. These changes included the following:

1. Adenopathy
 - a. hilar—usually bilateral
 - b. paratracheal—most always on the right
 - c. both may occur with or without pulmonary changes
2. Pulmonary parenchymal changes
 - a. infiltrations
 - (1) miliary—usually diffuse finely granular appearing bilaterally
 - (2) nodular—usually diffuse coarsely granular appearing bilaterally
 - (3) metastatic-like areas
 - (4) streaks of atelectasis
 - (5) lobular infiltrates or consolidations

- (6) noncircumscribed areas of consolidation
 - (7) extensive confluent infiltrates with or without cavitation
- b. healing and degeneration changes
 - (1) linear fibrotic streaks from the hili
 - (2) diffuse fine fibrosis
 - (3) peribronchial or diffuse fibroreticular pattern of fibrosis
 - (4) coarse fibronodular pattern of fibrosis
 - (5) extensive fibrosis with cystic change
 - (6) emphysema with or without bullae

3. Combinations of No. 1 with a. or b. of No. 2.

Thirty-one of the patients underwent pulmonary function testing. Pulmonary changes ranged from restrictive-obstructive alterations to no change at all. The findings may be seen in *Table 1*.

TABLE 1

Changes	Stage		
	I	II	III
Restrictive	2	10	4
Obstructive	1	1	2
Decreased diffusion	0	8	3
Decreased pulmonary capacity	0	7	1
Normal	0	6	0
Number tested	2	23	6

Treatment of sarcoid patients in this study depended upon the severity of the pulmonary deficit as judged by the pulmonary function tests and the limitation of the patient's activity. The patients who were treated were followed by serial function tests and chest x-rays. Corticosteroids were used in all cases, with the exception of one in which ACTH was used. Of the 19 treated patients, 14 showed improvement both by pulmonary function tests and radiographically. Of the 25 nontreated patients, eight improved without difficulty. The remainder of the cases were lost to follow-up and therefore no real evaluation of treatment could be entertained at this time. However, with the responses of the treated group as compared to the untreated case, one could say that corticosteroids do cause significant improvement in pulmonary sarcoidosis both symptomatically and physiologically.

Discussion

Only 44 cases of proven or suspected pulmonary sarcoidosis are presented. This low figure is understandable in the fact that there is a higher incidence of the disease on the east coast, where most of the studies are made, than in the midwest, not to men-

tion the difference in population. Eighty-four per cent of these patients were proven to be sarcoid by diagnostic biopsies.

The age of the patients ranged between 20 and 67 years of age and the average age at the onset of symptoms or discovery of an abnormal chest film was 38.9 years, both figures reflecting the higher incidence of aged people in the midwest. Symptoms, as is common, appeared at least six months prior to diagnosis and an unknown length of time after the onset of the disease. The white male and female ratios of 1:1 essentially agree with other studies as does the Negro male to female ratio. However, the ratio of Negro cases to white cases far underscores the figures reported in the literature, KUMC's ratio being approximately 1:2 instead of at least 10:1. It was of note that only one of the 13 Negro patients was a male.

Thirty-six per cent of the patients were evaluated due to an abnormal chest x-ray, while 59 per cent had respiratory type symptoms. Both of these percentages are off the reported values only slightly. Very few had a complaint other than intrathoracic sarcoid, but two were presented with ocular and arthritic complaints. Of the symptoms elicited, cough, dyspnea, weakness and fatigue, and chest pain were the most common. Forty-five per cent of the patients had no physical abnormality while the others showed mainly respiratory findings or lymphadenopathy which agrees with other studies.

Laboratory results showed that 48 per cent of the patients had an eosinophilia of 5 per cent or greater, although not one of them tested had any evidence of abnormal calcium metabolism. This may reflect that only five of the cases were the subacute variety in which hypercalcemia is seen most commonly to exist. Suppressed skin test reactions upheld the anergy which exists in sarcoid; however, it is interesting to note that in one case atypical mycobacteria and in two other cases mycobacteria were cultured from biopsy specimens and sputum. These findings support Mankiewicz and Chapman's findings for an etiology of sarcoid which is presented in detail in the next section of the paper. Only one Kveim test was applied which reflects that the extract was not readily available to American physicians. Therefore the diagnosis of sarcoid was on the basis of biopsy and the clinical picture only. Serum protein studies indicate that in the midwest elevation of the gamma globulin is the most common aberration, which is upheld by the fact that few of the cases were stage I and the majority were stage II with active fibrosis taking place. Thirty-three per cent of the patients had a nonspecific hypoalbuminemia.

The most common biopsy procedures were the open lung and lymph node biopsies. This reflects that

most patients did not have an easily accessible lesion for biopsy, and, therefore, these other more difficult and less safer routes were chosen. As was mentioned above, few American doctors can obtain the splenic extracts for the Kveim reaction. Ninety-five per cent of the open lung biopsies were positive for sarcoid. Eighty-three per cent of the lymph node biopsies were positive for sarcoid. Thirty-three per cent of the bone marrow biopsies were positive. None of the liver biopsies nor bronchoscopies showed evidence of sarcoidosis. Therefore, few of these cases had generalized sarcoidosis, which is also supported by the fact that only one of the patients had osseous involvement recognized on x-rays. Seven per cent had dermatologic and myocardial involvement, 5 per cent had ocular sarcoid, and, surprisingly, only one showed evidence of liver involvement in this relatively elderly population. There were no cases which presented as the bilateral hilar adenopathy syndrome which may be due to the fact that it is not well enough known to be correlated with sarcoidosis.

The x-rays demonstrated every phase and aspect of intrathoracic sarcoid from hilar adenopathy and infiltrates to pulmonary degenerative changes. However, only 9 per cent of the series consisted of stage I individuals, which is unusual for a population. The majority of the patients had parenchymal involvement. No good correlations could be made between x-ray findings and pulmonary function studies except that stage III chest films did have extensive pulmonary parenchymal changes. The treatment which was instituted did improve 14 of the 19 patients, or 74 per cent, who were put on corticosteroids. Dosages were individualized and were started when pulmonary function tests showed impairment of pulmonary function beyond mild incapacities. These patients were followed by pulmonary function studies and chest x-rays at three month intervals. It would seem to indicate that corticosteroids do indeed alter the course of the disease and give significant improvement in the patient's symptomatic picture.

Review of the Literature

Sarcoidosis is the most common of the apparently infectious granulomatous disorders which has in the past few years become an important and challenging problem. Historically, though, Jonathan Hutchison in 1875 first observed and described sarcoidosis of the skin as granulomatous lesions on a patient's skin and called it "Mortimer's malady." In 1889, Besnier described a similar skin case which he thought was a form of tuberculosis of the skin, or "lupus vulgaris," and called it "lupus pernio." Caesar Boeck reported the first anatomical and clinical description of systemic sarcoidosis in 1899, and called it "multiple

benign sarcoid." In 1909, a man by the name of Heerfordt described a symptom complex of chronic iridochoroiditis and bilateral parotitis called "uveo-parotid fever." Jungling, in 1911, described sarcoidosis of the bone and named it "osteitis tuberculosa multiplex cystica." However, in 1914 Schaumann pointed out that "lupus pernio" as described by Besnier and Boeck's "multiple benign sarcoid" were variations of one and the same disease and that these complaints were only occasional skin manifestations of an internal disease which might affect many organ systems of the body, especially the lymphatic system. His new name for this entity was "lymphogranulomatosis benigna." This is where sarcoidosis got its name as Besnier-Boeck-Schaumann disease. During the past three decades, a more complete clinical and biological description of sarcoidosis has been offered by Freiman, Longcope, and Pierson. In the 1940's an early form of the disease was recognized as a result of massive x-ray of the military in Europe. This early, or acute, form is manifested by bilateral hilar adenopathy combined with erythema nodosum and is therefore called the bilateral hilar adenopathy syndrome. More about this aspect of the disease will be mentioned later in the paper.

Sarcoidosis is world-wide in distribution, but occurs most commonly in the temperate zones of northern Europe and eastern United States, Australia, and New Zealand. Its highest incidence is in Sweden where 140 per 100,000 population have the disease. Radiographic mass surveys in Denmark indicate that the annual incidence of new cases of sarcoid was 3.5 per 100,000 population. The heaviest concentration of cases in the United States is found in the southeastern and northeastern states, reportedly 11 per 100,000 population. However, the incidence of the disease is probably greater than that actually observed since there are many asymptomatic patients, some of whom are found on incidental chest x-ray surveys. Sarcoid rarely occurs in natives of southern Europe, western United States, South America, and Hawaii, and is reported uncommonly in Asia and Africa. Eskimos and Indians in Canada have little susceptibility to sarcoid in contrast to their high incidence of tuberculosis. Moreover, the distribution of cases does not conform to that of tuberculosis elsewhere.

The peak prevalence of sarcoid is in the third decade of life, occurring rarely before the age of 18 and infrequently after age 50. It occurs in 1 to 4 per 100,000 young adults, is very uncommon in children, and rarely makes its first appearance in the elderly. Sarcoid becomes manifest in the pregnant female more often than expected; however, it is improved by the high levels of steroids which occur in the body in that physiologic state.

In the United States, a majority of patients are

Negro. It is reported to occur 15 to 18 times more frequent in this race than in whites. With this high rate of occurrence of sarcoid in the American Negro is associated an increased tendency to have a symptomatic form of the disease with a generally poorer prognosis. In the Negro race, females with sarcoid occur twice as frequent as males with the disorder, while in whites, males equal females approximately.

Epstein indicated, in his results of twin and family studies, that a genetic predisposition to the disease exists. Blood group A has been reported to show an increased probability of having sarcoid. However, although reported in family groups and twins, more likely these individuals have probable exposure to the same environmental influences.

Although the clinical and radiological aspects of the disease are of paramount importance in regards to diagnosis, prognosis, and treatment, etiological problems afford material for highly stimulating scientific speculation. Numerous experimental and immunologic studies have failed to provide substantial evidence for a relationship between pine pollen and sarcoid. Many agents for causing a "sarcoid reaction" exist, but a common denominator of such dissimilar stimuli is unknown. A lipopolysaccharide substance has long been suspected. But, how do you explain the formation of a reaction with metallic elements such as beryllium and zirconium? Some authors feel that sarcoid is a more or less generalized foreign-body reaction, although it cannot be attributed to the currently fashionable diseases of autoimmunity. A particular state of reactivity of the host organism could exist, since there is a greater incidence of sarcoid in certain races, age groups, blood groups, and, in regions where it is common, afflicts only certain individuals. On the basis of the Kveim test, it seems to point to a particular antigen.

It was once thought that sarcoid was a specific form of tuberculosis because of the morphological appearance of sarcoid lesions, the course of the disease, the associated anergy to tuberculin, and the rapid fall of tuberculosis prevalence rates in the last two decades with no associated fall in the prevalence of sarcoid. The frequency with which tuberculosis developed after that of sarcoid is 3.6 per cent, only slightly exceeding the incidence in the normal population. Furthermore, sarcoid lesions are not affected by antituberculous drugs. Although mycobacteria and atypicals have been cultured from non-caseating lesions, usually in lung and lymph nodes, they have never been cultured systemically. When tuberculosis and sarcoid coexist there is no histologic evidence of morphologic transition, and sarcoid lesions never show acid-fast organisms. BCG vaccination does not, apparently, protect people from sarcoidosis. Furthermore, the anergy to tuberculin which

exists in sarcoid also prevents usually positive reactions with other antigenic stimuli, indicating a non-specific hyporeactivity.

Although evidence for a causative role of infection is somewhat lacking, new facts have come into view. Mankiewicz has found that a great proportion of patients with sarcoid are bearers of lysogenic mycobacteria and mycobacteriophages. Furthermore, Mankiewicz and Van Walbeck have isolated atypical mycobacteria from sarcoid patients. Chapman and Speight detected that 80 per cent of their sarcoid patients carried antibodies in their serum to atypical mycobacteria. Mankiewicz theorizes that sarcoid patients, because of some immunologic defect in antibody formation, appear incapable of elaborating phage-neutralizing antibody which leads to a lack of caseation in sarcoidosis and anergy to tuberculin. This inability to produce antibodies against these bacteriophages also permits the emergence of lysogenic mycobacteria by some change which the phages impose on the bacillus. The lysogenic mutants produced may then be the causative agent in sarcoidosis. The desensitization brought about by the excess of antigen would be most specific for those antigens related to the causative organism, and also would cause a general but less pronounced diminution for all delayed reactivity. This nonspecific suppression of the delayed hypersensitivity response would reach its greatest magnitude when the disease is most active. As the disease decreased in magnitude, one would find increased reactivity which exists in sarcoid.

In summary, then, a predisposing immunologic alteration prevents phage-neutralizing antibody from developing which allows an unchecked interaction between phage and host mycobacteria leading to a symbiotic relationship in an intracellular location. A chronic, smoldering process would stimulate the R-E system resulting in subsequent reactions between cellular antibody and antigens, provoking widespread granulomatous formations and impairment of delayed hypersensitivity. Since early stages of the disease affect hilar lymph nodes, it seems most likely that a respiratory route of infection would be involved.

Sarcoidosis is characterized histologically by epithelioid-cell tubercles with little or no caseation, the lesions tending to become converted to hyalinized or fibrous tissue. However, the disease cannot be differentiated histologically from local "sarcoid reactions" which may be produced by other antigens, but must be distinguished by clinical, radiological and pathological demonstration of systemic distribution. The organisms and physical agents which produce "sarcoid-like" granulomatous diseases are listed below:

1. *Viruses*: M. lymphogranulomatosis
2. *Bacteria*: M. tuberculosis, M. leprae, B. abortus
3. *Fungi*: H. capsulatum, C. neoformans
4. *Protozoa*: L. donovani, T. pallidum
5. *Nematodes*: A. lumbricoides, S. stercoralis
6. *Other diseases*: carcinoma, ovarian tumors, periarteritis nodosa, lupus erythematosus, rheumatoid arthritis, regional enteritis, Hodgkin's disease, lymphosarcoma
7. *Other agents*: beryllium, talc, silica, zirconium, pine pollen, calcareous spar, specific soil types, certain hair sprays

The sarcoid lesions are characterized by the formation of noncaseating granulomas called "naked tubercles" which may involve any tissue of the body, but almost always the lung. Microscopically, these lesions are composed of large plump, closely packed, focal collections of epithelioid cells surrounded by a rim of fibroblasts and a few scattered lymphocytes with multinucleated Langhans-type giant cells interspersed throughout. There is no caseation necrosis. Cellular inclusions occur in both epithelioid and giant cells, but are nonspecific in nature. These bodies, which are of three types—asteroid, Schaumann, and residual bodies, are not diagnostic of sarcoid, but lend a greater degree of certainty to the diagnosis. They occur 88 per cent of the time in sarcoidosis, 62 per cent in berylliosis, 10 per cent in Crohn's disease, and 6 per cent in tuberculosis. Aging granulomas are characterized by replacement of cells with proliferating fine strands of reticulin, followed by collagen which converts the individual lesion to a small rounded scar. Collagen frequently shows hyaline degeneration and loses its fibrillary structure, appearing somewhat like necrosis.

Cases diagnosed as sarcoid seldom come to autopsy, but grossly, three main types of discrete lesions are found in the lung: miliary 3 millimeter yellow-white lesions, nodular 1-2 centimeter whitish lesions, and conglomerates (groups of nodules) 2 centimeters or more. It is the coalescence of granulomas which produces the nodular appearance. These lesions can affect any part of the lung, but are often midzonal. They are found most prominently in relation to septa, bronchi, vessels, and pleura. All three types of lesions may be associated with varying degrees and extents of fibrosis. Atelectasis, bronchiectasis, and cystic change may be apparent. Calcification occurs uncommonly in conglomerate lesions and in the periphery of lymph nodes.

The tissues which are involved by sarcoid lesions are listed in order of their frequency. Mediastinal, hilar, or peripheral lymph nodes are involved 100 per cent of the time and may be palpable in more than 50 per cent of patients with sarcoid, seven out of eight nodes being positive for sarcoid histologically. Lymphadenopathy usually occurs late. Respiratory lesions, which have prime importance in diagnosis,

prognosis, and management, occur 90 per cent of the time. Bronchial involvement is rather common, but is clinically silent and often overlooked. At bronchoscopy, it may appear even as normal mucosa. Distortion of the bronchi are secondary to progressive fibrosis and rarely to extrinsic compression by enlarged lymph nodes. Hepatic involvement occurs in old age, manifested by enlargement of the organ with abnormal liver function tests. It is involved 75 per cent of the time, but is usually asymptomatic and rarely causes portal hypertension. The spleen is enlarged 25 per cent of the time, but in autopsy series, it is involved 70 per cent of the time with granulomas being usually asymptomatic. Hypersplenism has been reported; however, it is rare. Sarcoidosis of the skin occurs 20 per cent of the time with predilection for the face and the formation of non-specific nodules, papules, and plaques. Iridocyclitis is the most common ocular lesion of sarcoid. Ocular lesions occur 15 per cent of the time, but 25 per cent of the time when sarcoid is generalized. Involvement of bones occurs 10 to 20 per cent of the time, producing honeycomb appearance or cystic changes localized to the phalanges of the hands and feet. These lesions are usually asymptomatic.

Other less common and less observed involvement of the body includes the central nervous system, including cranial nerve palsies associated with uveoparotitis which usually follows within weeks or months of the hilar adenopathy. These palsies are due to compression of the facial nerve and occur uncommonly. The voluntary muscles are asymptomatic, but these structures are involved up to 50 to 60 per cent of the time. At necropsy the myocardium is involved 20 per cent of the time, but only produces symptoms in 1 to 2 per cent of those involved. Cardiac manifestations include conduction disturbances and arrhythmias, and less commonly angina and congestive heart failure. Kidneys are affected to varying degrees by the effects of hypercalcemia and hypercalciuria, and sarcoid granulomas if generalized in the body.

The clinical features in the individual patient depend, in part, on the sites affected, the extent of involvement, and the stages in the development of the lesions. Usually there are either no symptoms or only mild complaints including weight loss, fatigue, cough, dyspnea, and chest pain. As pulmonary disease increases so does the dyspnea. A productive cough may begin and hemoptysis, which is an infrequent occurrence, 6.2 per cent of symptoms, and secondary to the invasion of bronchi and vessels by sarcoid lesions, may appear. Further pulmonary degeneration may take place, giving rise to bronchiectasis, emphysema with bullous formation, and spontaneous pneumothorax secondary to ruptured blebs. Fever, when

rarely present, is low grade. The mere presence of respiratory symptoms signifies rather extensive pulmonary involvement. Other than lymphadenopathy, the few physical findings which occur are occasional rales and scattered wheezes.

Fifty-five to 60 per cent of the cases of sarcoid are brought to the physician's attention by an abnormal chest x-ray. Therefore, only 40 to 45 per cent of the patients are symptomatic with the complaints of dyspnea, cough, fatigue, or weight loss. It must be mentioned, however, that clinical symptoms and signs are often absent or small in contrast to the marked radiographic changes which may occur.

In a survey of 311 cases of sarcoidosis between the years 1946-1961 at Mt. Sinai Hospital in New York, two thirds were under 40 years of age. One half were Negro, and females outnumbered males 2 to 1. Forty per cent of the patients were referred due to an abnormal x-ray. Sixty per cent had symptoms, of which 19 per cent were respiratory in nature, 11 per cent presented as erythema nodosum, 7 per cent were ocular complaints, 6 per cent were due to skin disorders, and the rest presented with various symptoms involving peripheral lymph nodes, salivary glands, and the central nervous system.

Unquestionably, sarcoid is frequently initiated by erythema nodosum or arthralgia. This acute stage of sarcoid manifested also by bilateral hilar lymph nodes is less common in the United States than in northern Europe. In Scandinavian countries, one third of sarcoid patients develop an acute febrile episode along with these associated symptoms. They have called it Löfgren's syndrome and represents what is called in the rest of Europe and the United States as bilateral hilar lymphadenopathy syndrome. Although bilateral hilar enlargement occurs in 100 per cent of the patients, erythema nodosum occurs only 50 per cent or more of the time. This disorder occurs mainly in young adults, predominantly females, between the ages of 25 and 30. Tuberculin sensitivity is absent in approximately 50 per cent. The polyarthralgia which accompanies this syndrome affects principally the knees, ankles, wrists, and elbows. The rash and joint manifestations subside in three to six weeks and regression of the syndrome occurs within two years in 92 per cent of the cases. Interestingly, sarcoidosis is the most common cause of erythema nodosum in England.

Since approximately 55 per cent of sarcoid patients are diagnosed on routine chest films or complaints unrelated to the disease, the pulmonary aspect of the disease must be considered the most important. More than 90 per cent show x-ray evidence of thoracic changes indicative of pulmonary sarcoid involvement. Parenchymal disease, as shown in blind biopsy of the lung, was present early regardless of a clear

x-ray appearance and hilar adenopathy. Therefore, the activity of sarcoid cannot be determined, but only approximated, on the basis of x-ray appearance, since there is little correlation between clinical findings and severity of the disease with the x-ray appearance.

There have been numerous attempts to classify the "faces" of pulmonary sarcoidosis. Löffler in 1940, Dressler in 1942, Pautrier in 1948, and Heilmeyer, Wurm, and Reindell in 1956 have set up essentially the same classification. Their system divides pulmonary sarcoid into three stages. Stage I involves only hilar and mediastinal adenopathy. Stage II is concerned with specific pulmonary parenchymal changes, and stage III contains mixed sarcoid and fibrocystic pulmonary changes. Siltzbach and Hartweg have each independently proposed their own system which entails a fine, more detailed, means of classification. Each stage, in reality, is not a different form of the disease, but simply progressive stages in its development. None of the changes are pathogomonic for sarcoid except the change from one stage to another or the sequence which is observed.

Stage I consists of widening of the hilar and mediastinal structures by enlargement of the lymph nodes. This is associated with an intact pulmonary parenchyma. Hilar nodes are always affected, usually bilateral and more on the right than on the left. It rarely occurs unilaterally. The right paratracheal mediastinal node is sometimes involved, but the anterior mediastinal nodes are spared. The nodes usually range up to 5 to 6 centimeters in diameter, are ovoid, evenly dense, sharply defined bodies. Tuberculous caseation and periadenitis in contrast leads to uneven and irregular densities. Overlapping of the nodes produce an over-all lobulated pattern to the hili and may reach huge dimensions, the so-called "potato nodes." These nodes rarely cause distortion of the bronchi leading to atelectasis and bronchiectasis. Although calcification has been reported, especially in the periphery of the nodes, no calcification is the rule. This first stage is variable and unpredictable. In most cases spontaneous regression of lesions occurs, or fibrous scarring defined as "hilar hardening." Other cases, after a prolonged period of adenopathy, show progression to the second stage.

Stage II develops within one year or less of the onset of stage I, if it is going to appear. Adenopathy may diminish somewhat and the nodes always lose their sharp definition and become irregular and poorly demarcated. But, stage II is concerned primarily with the development of parenchymal changes. The pulmonary changes may spread throughout all lung fields or affect large areas only. The infiltration is usually bilateral. Diffuse, discrete miliary densities of about 1 millimeter in size result from coalescence

of the individual tubercles. These are scattered widely, mimicking miliary tuberculosis, but have adenopathy present. A more nodular type of infiltration may result from coalescence of the miliary densities varying in size from 3 to 5 millimeters. These lesions again may be diffuse or localized to any segment in the lung. Fewer of these types undergo complete regression than the ones in stage I, and many of these lesions regress, leaving traces of a reticular-nodular fibrosis in sites of major parenchymal damage. Moreover, some develop into the stage III picture.

Stage III lesions are irreversible lesions of lung parenchyma due to sarcoid and fibrous changes. In all cases, hilar lymph node enlargement is absent or diminished in magnitude, but always poorly defined and irregular. Sarcoid lesions are arranged in large conglomerates usually varying in number, size, and configuration, appearing as large nodules or densities. There may be cavitation within these lesions. The fibrotic appearance ranges from simple reticulonodular fibrosis to extensive replacement by fibrous tissue causing retraction and accompanied by emphysema or bronchiectasis. This ultimately leads to cor pulmonale. Markedly advanced cases show sclerotic and emphysematous changes. Characteristic of the third stage, however, is the progressive sequence of events marked by alternating periods of remissions and progression.

As far as the x-ray course of the disease is concerned, 80 per cent of the cases with hilar adenopathy alone resolve in the first year, and another 10 per cent in the second year. On the average, it takes eight months for the x-ray to become normal appearing again. Ten per cent of the cases of hilar adenopathy persist with or without the development of pulmonary opacities. In general, the older the age at the onset of the disease, the greater the chance of the condition persisting chronically. If pulmonary opacities developed, 60 per cent of these lesions showed spontaneous clearing, 30 per cent within one year, 80 per cent within two years, and 20 per cent in three to seven years. For patients having opacities for less than two years, the average time for spontaneous resolution by x-ray was 11 months.

The only other x-ray findings include those which involve bone. These lesions are either a cystic-appearing lesion of the phalanges of the hands and feet or a diffuse thinning of the cortex with reduction in the number of bony trabeculae. These lesions in sarcoid are more common in the presence of dermatological involvement, or seen most frequently in conjunction with sarcoid in all organ systems. It is, apparently, a waste of time to do routine x-rays of the hands and feet in the absence of chronic skin lesions.

Laboratory findings are another tool used in the diagnosis of sarcoidosis. Although many aberrations may exist in this disorder, none of the tests are constant nor pathognomonic. Leucopenia is infrequent and occurs with splenomegaly. Erythrocyte sedimentation rates are variably elevated, especially if the patient is febrile. An eosinophilia of 5 per cent or greater occurs in 20 to 30 per cent of the cases, while one of 8 to 20 per cent occurs in only 15 per cent of the cases. Hyperuricemia also has been observed. Minimal elevations of serum calcium levels is reported to exist 20 to 30 per cent of the time, is of usually no clinical significance and is not associated with bone involvement. A hypercalcemia of 11.5 milligrams or higher is said to exist in 14 per cent of the patients. Efforts to correlate hypercalcemia with sarcoid of a specific organ, chronicity of the disease, degree of involvement, or mechanism of abnormality have failed. It is apparent, as are changes in the hands and feet, with obvious disseminated sarcoid only; and, it is the only manifestation of the disease that is not caused by mechanical interference with the function of a specific tissue or organ. Hypercalcinuria is more frequent and is reported to occur from 29 to 50 per cent of the time. It is of note that fecal calcium is decreased. Nearly all sarcoid patients with hypercalcemia or hypercalcinuria are sensitive to vitamin D supplement, which indicates an etiology for these calcium changes—sensitivity to vitamin D. Both sarcoid patients and patients with vitamin D intoxication are characterized by increased serum calcium, increased urinary calcium, decreased fecal calcium, and rapid correction of these abnormalities by corticosteroid therapy. All mechanisms are apparently independent of each other.

Serum protein aberrations occur from 50 to 80 per cent of the time. Hyperglobulinemia greater than 3.5 gram per cent is said to exist in 61 per cent of patients, usually with the chronic stage of the disease. In electrophoretic studies of serum proteins, significant alterations are infrequent and of no diagnostic value. However, when they do occur, elevations of alpha 2, beta, and gamma globulin often occur in a manner producing a step-like electrophoretic pattern. Alpha 1 globulin is usually normal. Alpha 2 globulin is normal in stationary cases, but is increased in progressive disease. Beta globulin is increased in many, especially in the early cases. Gamma globulin, which is the most common defect, is usually normal in early cases and stationary, but an increase is seen mainly in connection with fibrosis or progressive processes. Albumin, if decreased, is decreased in all areas, especially progressive ones. James states that the highest proportion of abnormal globulin elevation is found in patients with erythema nodosum. Furthermore, abnormal globulin patterns

are more common in Negros. Therefore, this may reflect a racial difference in response to sarcoid. Norberg reports that Negros in the United States have a tendency to have higher serum globulin fractions than whites.

Serum complement activity has been reported increased in 10 of 11 patients studied in a series. Therefore, the offending organism may be sheltered in an intracellular location protected from humoral factors such as antibodies and the subsequent interaction of these complexes with complement.

As for skin testing, the Kveim test is usually positive and there is a feeble response to tuberculin and other bacterial and fungal antigens. There is a normal immediate-type hypersensitivity. Kveim test material is now made with human sarcoid spleen and is positive in 73 to 96 per cent of all patients with active sarcoidosis, this percentage falling to as low as 33 per cent among those with inactive disease. With experienced clinicians, only a 3 per cent or less false-positive rate is observed. In the Kveim reaction, which is biopsied after three to four weeks and appears histologically identical with any "sarcoid reaction," it is a delayed-type hypersensitivity because it takes a latent period for the reaction to develop. There are no circulating antibodies, and antihistamines and adrenalin do not suppress the reaction whereas corticosteroids do. Kveim reactivity represents a specific responsiveness possessed almost exclusively by patients with sarcoidosis. Since the beryllium and zirconium skin tests depend upon a state of sensitization due to previous exposure, a positive Kveim test might imply a state of generalized hypersensitivity due to previous sensitization by some Kveim-like agent or antigen. An unequivocal reaction may be obtained 60 to 80 per cent of the time, making biopsy unnecessary. However, the test material has not been readily available to American physicians due to difficulties in production of splenic extracts that are potent, specific, and stable.

BCG vaccination neither protects nor promotes sarcoidosis and does not influence its incidence. The relative intracutaneous anergy to multiple antigens usually eliciting delayed-type hypersensitivity appears to be acquired either at the clinical onset of sarcoid or shortly before it becomes manifest. In the United States, 25 to 35 per cent of all patients have a positive tuberculosis skin test. But, here again, it depends on the activity of the disease, the highest degree of anergy existing in the most active part of the disease. Historically, in 1917 Schaumann observed negative tuberculin skin testing in sarcoid patients. In 1953 Nitter documented the loss of tuberculin sensitivity in a patient with active sarcoid who had been positive previously, and observed return with remission. It has been shown though, that

the immunological sensitivity is merely depressed, not absent, since it reappears when cortisone is added. In 1952, it was shown that it was not a cutaneous abnormality that existed, but a defective leucocyte function. In 1964 this defect was shown to reside in the lymphocyte and, therefore, a hyporeactive cellular antibody mechanism exists. Studies have also shown significant decreases in reaction rates to mumps, candida, and trichophyton antigens in patients with active disease when compared to patients with inactive disease. Atypical mycobacteria antigens showed a more pronounced hyporeactivity. Many of the immunological responses given above are mimicked by Hodgkin's disease which may also present with a similar symptom complex.

The more bizarre the presentation of the disease, the more the need for histologic support. Since biopsy specimens are not completely diagnostic, the pathologist must report that the specimen is consistent or compatible with that of sarcoidosis. It is reported that 60 per cent of the patients with sarcoid have lesions easily accessible to biopsy. Pains-taking physical examinations will reveal cutaneous lesions, subcutaneous nodules, or palpable lymph nodes with a 90 per cent positive biopsy report of these lesions if sarcoid is present. In the absence of an accessible abnormality, the following represents the percentage of positive biopsy reports per tissue in patients with sarcoid: mediastinal nodes, 100 per cent; lung, 99 per cent; liver, 80 per cent; scalene node, 74 per cent; gastrocnemius, 69 per cent; and bone marrow less than 30 per cent. In place of the scalene node biopsy, supraclavicular node biopsy has yielded 87 per cent positive results in sarcoid patients and is much safer. In Europe, mediastinoscopy has replaced scalene node biopsy with positive rates of 95 to 100 per cent. However, this procedure is more difficult, but safely handled in the hands of an experienced scopist. Pulmonary and hilar node biopsies are accomplished through limited thoracotomy incisions. For disseminated pulmonary lesions, an intercostal pulmonary punch biopsy may be used. Gastrocnemius muscle biopsy is more apt to be positive in patients with erythema nodosum or arthralgia. Biopsy of conjunctival mucosa, hard palate, and bronchial mucosa have a relatively low diagnostic rate. Bronchoscopy rarely shows characteristic signs. Schiessle in 1963 has reported a positive bronchial biopsy in 40 per cent of stage I patients, 78 per cent in stage II, and 50 per cent in stage III patients.

Lung biopsy has shown an alveolar membrane thickening secondary to perivascular and alveolar fibrosis, which is supported by pulmonary function studies indicating that alveolar-capillary block is related to membrane thickness. This abnormality in pulmonary tissue leads to a reduction of diffusion capacity which is the most common abnormal pul-

monary function test. It is reported in 80 per cent of the symptomatic patients. Other frequent abnormal pulmonary function studies include reduced lung volume, reduced compliance, decreased maximal breathing capacity, and increased airway obstruction which are caused by interstitial and peribronchial fibrosis. Extensive perivascular fibrosis and anoxia leads to the development of pulmonary hypertension and cor pulmonale. The most effective tests for the correlation of lung parenchymal change and pulmonary function studies are total lung diffusion rates and arterial oxygen tensions with exercise.

In stage I, few lung functions are impaired. There may exist a mild diffusion deficit and minimal restrictive changes. However, in stage II, discrete sarcoid granulomas are found scattered in the lung, in interstitial, peribronchial, perivascular, subpleural, and intra-alveolar locations. Normal alveoli are replaced by these lesions with subsequent reduction in lung volume and vital capacity, decreased compliance with increased dead space, and decreased diffusion capacity. With healing, the nodule is transformed into fibrous tissue which extends into adjacent, previously normal intra-alveolar septums with further reduction of diffusion capacity but not of lung volume. Healing of peribronchial granulomas may lead to further narrowing of the airways. These healed granulomas with small, scattered areas of fibrosis may be difficult to detect on x-rays of the chest, which leads to the apparent paradox of x-ray clearing with worsening of pulmonary function. However, it is well recognized that infiltrative pulmonary diseases on x-ray may be associated with normal pulmonary function tests. Therefore, pulmonary function tests are needed for patient evaluation and in follow-up of therapy, since clearing on x-ray is not always reliable or correlated with clearing of pulmonary deficits. Young *et al.* states that one cannot reliably predict the degree of parenchymal change or abnormality of diffusion based on any given function study or x-ray change due to their variability.

In stage III patients, a state of pulmonary insufficiency has developed. With x-ray evidence of extensive fibrosis, it has been shown that diffusion capacity, lung compliance, and lung volume are markedly reduced or impaired. Ting *et al.* have demonstrated that when cystic or bullous changes are present, airway obstruction exists. Increased pulmonary resistance and decreased maximal mid-expiratory flow rates are present. Reduction in compliance is associated with diminished vital capacity and is the most likely major cause of dyspnea in sarcoid patients.

Although pulmonary function tests are not as helpful in diagnosing pulmonary sarcoidosis as they are in evaluating the patient's deficit and his treat-

ment, the previously mentioned material is. Anergy to tuberculin and fungal antigens is suggestive, but provides no proof of the diagnosis of sarcoid. The Kveim test is a valuable diagnostic tool in the active phase of the disorder, but loses much of its capacity when lesions undergo resolution. Signs and symptoms of the disease are variable and sometimes nonexistent. None of the laboratory tests are present with any consistency, but when they are, are combined with other facets of the disease to make the diagnosis. The patterns of x-ray shadows in the parenchyma of the lungs may imitate a number of pulmonary lesions. However, certain findings are suggestive but not pathognomonic of sarcoid on x-ray. Grossly enlarged hilar nodes alone in a healthy person points to the diagnosis. Extensive bilateral nodular parenchymal densities with the patient having no symptoms, especially in combination with hilar adenopathy or right paratracheal involvement, strongly indicates sarcoidosis. Furthermore, the following of the cycle of pulmonary sarcoid or its evolution in the chest can be helpful. But a typical feature of sarcoid is the great variation of the disease as well as the appearance of the lesions with transitions from one type of infiltration into another. The various types of lesions observed, it must be remembered, represents only manifestations of different stages of evolution of the disease.

The detection of cases is beset with certain difficulties. A number of disorders are characterized by epithelioid-cell granulomas such as tuberculosis, berylliosis, leprosy, brucellosis, and some fungal diseases. The local "sarcoid reactions" are easily confused with sarcoidosis. Furthermore, sarcoid almost always begins silently and very often runs its entire course asymptotically. This disease presents with an unusual and not universally recognized complex of organ involvement, hence diagnosis often is delayed months or years after the onset, until symptoms appear. Therefore, the diagnosis depends on three things: a positive biopsy, a consistent clinical picture, and exclusion of other diseases. Disorders to exclude are noncaseating tuberculosis, histoplasmosis, atypical mycobacteria infections, pneumoconiosis, idiopathic pulmonary fibrosis, alveolar proteinosis, carcinoma of the lung, lymphomas and Hodgkin's disease, Wegener's granulomatosis, eosinophilic granuloma of the lung, and hyperparathyroidism.

Once the diagnosis is made, treatment must be decided upon. Interestingly, the disease may have already run its path. The clinical course is divided into two phases based on the radiological appearances of sarcoidosis by Turiaf and Brun in 1955 and reintroduced by Heilmeyer and coworkers in 1956. Both phases differ in natural history, response to treatment, prognosis, and many other respects. Sarcoid does not always fall so neatly into such schemes, is

sometimes unpredictable, but usually traces a fairly nice succession of anatomical, radiographical, and clinical phases.

Stage I patients are in the subacute or transient phase of the disease. It represents the mildest form of the disease lasting two years or less and its changes are reversible. It is sometimes preceded by erythema nodosum, usually existing presymptomatically, and is detected by routine x-ray. Usually, the patients are less than 30 years old, their Kveim tests are positive and their tuberculin tests are negative. Ocular or glandular lesions appear within one to two years of the onset of the illness and their response to steroids is favorable.

Stage II and III patients make up the other clinical phase called the chronic or persistent stage. Stage II patients have slow healing, often with residual scarring. Their lesions are largely reversible, but some do have mild pulmonary insufficiency. Stage III patients have disseminated pulmonary fibrosis, and emphysema leading to resultant progressive respiratory failure and chronic cor pulmonale. These people are the most chronic patients, the disease lasting greater than seven years, and they have organ impairment and scarring. Their prognosis is poor. Both stage II and III patients, which make up the chronic stage, are usually over 30 years old, are tuberculin negative, and may have lost their Kveim reactivity. They get peripheral lymph node enlargement and skin and bone lesions. Their symptoms are ameliorated by steroids, effecting relief but frequently relapsing after discontinuing the treatment. A comparison of the two phases of the clinical course is shown in Table 2.

The prognosis of sarcoidosis is favorable. Twenty-five to 50 per cent of the disease runs its course over several years with eventual recovery. Twenty to 35 per cent of the patients show some improvement, but have some degree of functional impairment. Five to 15 per cent of the cases show symptoms of severe respiratory impairment. Skin lesions of patients with erythema nodosum with enlargement of hilar nodes have a good prognosis, while those patients with extra-thoracic manifestations such as cutaneous or osseous lesions are associated with a poor prognosis. The five-year survival rate is 85 to 90 per cent with most deaths being secondary to pulmonary fibrosis causing respiratory failure, pulmonary hypertension, and cor pulmonale. Nitter reported in 1953 that mortality exists in up to 18 per cent in the untreated patients.

The only way to improve the prognosis of pulmonary sarcoidosis is to either find and restrict its cause or treat pharmacologically those patients who can benefit from it. Treatment at the present consists of two types of drugs, corticosteroids and chloroquine, both used to combat the inflammatory

TABLE 2
CLINICAL COURSE

	<i>Subacute</i>	<i>Chronic</i>
Age	Less than 30	Greater than 30
Onset	Abrupt	Insidious
Skin	Erythema nodosum	Plaques, keloids
Eyes	Conjunctivitis, acute uveitis	Keratoconjunctivitis sicca, chronic uveitis
Lungs	Hilar adenopathy	Pulmonary mottling
Bone cysts	Absent	May be present
Bell's palsy		
Parotitis	Yes, if present	Rarely persists
Adenopathy		
Histology	Naked tubercle	Healing fibrosis
Calcium metabolism	Hypercalcemia, hypercalcinuria	Nephrocalcinosis
Kviem test	Positive	May be negative
Spontaneous remission	Frequent	Rare
Steroid treatment	Abortive effect	Symptomatic relief
Recurrence	Rare	Frequent
Prognosis	Good	Poor-good

process. The majority of patients require no treatment because the symptoms are seldom disabling. Approximately one third of the sarcoid patients are treated with corticosteroids. Knowledge of the natural course of the disease in each individual is required in determining the indications for the steroid therapy. At the present, there are both absolute and relative indications. Involvement of vital organs such as the central nervous system, heart, or eyes is an indication. Persistent hypercalcemia or hypercalcinuria may lead to the necessity of treatment. Disfiguring skin lesions and glandular involvement, including hypersplenism, are others. Symptomatic relief of respiratory complaints, especially dyspnea, is common. Rarely should the indications be on the grounds of x-ray appearance. But treatment has been indicated if there is progression of lesions after three months of observation or if the lesions are unaltered after six months. There is no treatment of hilar enlargement. The last and most important indication, since most cases involve the pulmonary system, is the progressive pulmonary involvement as reflected by pulmonary function tests.

Treatment with corticosteroids is most effective during the proliferative stage of the disease, but they are suppressive only, rather than curative. As a matter of fact, steroids can suppress all of the manifesta-

tions of active sarcoidosis. The mechanism of action of steroids is unknown, but the correction of abnormal calcium levels has proven therapeutically and diagnostically invaluable. Pathologic study of skin and lymph nodes involved by sarcoid before and after steroid therapy has shown that steroids may simply accelerate the normal process of healing of granulomas with fibrosis. They suppress new granuloma formation and cause hyalinization and scarring. Therefore, it is not surprising to find that patients who have only a mild impairment of pulmonary function do not show functional improvement with therapy, even though there may be marked x-ray and clinical improvement. If steroids could be shown to avert the development of pulmonary fibrosis, their administration would be indicated in all cases of sarcoidosis.

Corticosteroid therapy has no consistent beneficial effect on patients in whom pulmonary function is only mildly impaired initially. Improvement depends upon the severity of impairment, not the duration of the disease. Only patients with severe reduction of diffusion capacity showed a consistent improvement. Other improvements, besides gas exchange, such as improved vital capacity and airway obstruction have been observed. It is reported that about one half of the cases with pulmonary opacities clear with steroid therapy. Therefore, approximately 80 per cent of all opacities clear with either steroids, or clear spontaneously. Sarcoidosis in pregnancy has been shown to decrease secondary to the high level of circulating cortisol during that state.

Each patient is individualized for dosages and followed at three month intervals by pulmonary function tests and chest x-rays. The minimal duration of initial treatment is usually three to six months, but the total duration of therapy can only be determined after trial and error. The level of maintenance is aimed at the lowest which will suppress clinical or radiographic evidence of progressive activity of the disease. Careful management of patients with sarcoid nearly always succeed in preventing the progression of fibrosis and recurrence. An insufficiently high dosage or premature discontinuation of treatment often leads to recurrence, prolongation of therapy, and the occurrence of irreversible changes. The contraindications of steroids are a history of depression, an active fungal infection, tuberculosis, or congestive heart failure. An antacid regimen may be helpful in preventing peptic ulceration. The complications of steroid therapy include cushinoid changes and the previously mentioned peptic ulcers. As has been mentioned earlier in the paper, antituberculous chemotherapy by itself has no effect on sarcoid lesions, but is used with steroids because of the vulnerability of these patients to develop tuberculosis.

Chloroquine produces regression of lesions in skin, in lymph nodes, in lung and it is also effective in hypercalcemia. However, its mode of action is unknown and it does not prevent the recurrence of the disease when it is withdrawn. It is used mainly for suppressing cutaneous sarcoidosis, as chest x-ray studies have shown little improvement after 12 to 21 months of therapy. Toxic psychosis, neuromyopathies, and corneal and retinal changes have been reported with its usage. Interestingly, it persists in tissues long after the last dose is given and therefore makes patients easily accessible to intoxication. The first drugs of choice are the corticosteroids, using chloroquine only if steroids are contraindicated or not effective, but with regular ocular examinations.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 1300 Topeka Avenue, Topeka, Kansas 66612.

SUGGESTIONS FOR TREATING ANHYDROUS AMMONIA PATIENTS

The Kansas State Board of Agriculture advised the JOURNAL that there are now 700 retail merchants and shippers who will be handling anhydrous ammonia. Thousands of farmers will be using this product in their fields. Breathing the fumes or contact with this material may cause severe damage and an occasional patient may not immediately identify the cause of his problem. Instances have been reported where a nurse, believing the irritation to be a burn, applied ointment which caused the ammonia burn to proceed deeper. The JOURNAL is carrying the following material, supplied by the State Department of Agriculture, with the recommendation that physicians ask the personnel of their offices to become familiar with its content.

Toxicology

Anhydrous ammonia is a gas when not under pressure. It is not a poison but produces serious burns as it is corrosive, caustic and has a freezing action on tissue. In concentrations of 2,000 p.p.m. it will burn and blister the skin after a few seconds' exposure. Concentrations of .5 per cent by volume will produce death by suffocation in minutes.

First Aid

WATER: Water is the best emergency treatment for an ammonia burn.

SKIN: Ammonia which has come in contact with the skin should be removed with water as soon as possible. Contaminated clothing should be removed and the affected skin areas flooded with a large

amount of water for the first 24 hours. Extreme care should be exercised in removing clothing which has become frozen. Forcible removal may tear skin badly. Frozen clothing may be thawed with water at room temperature. Do NOT use salves or ointments until the burned area is over 24 hours old. Instead, keep the area moist with water.

EYES: Ammonia should be removed from the eyes as soon as possible. The eyes should be forced open, the lids turned back and flooded 20 minutes or longer with clean water. If this is not done, a serious loss of vision may result. Change water so that contaminated water will not be used. If the patient is in pain, a couple of drops of .5 per cent pontocaine solution, or some other suitable water soluble surface anesthetic may be put in the patient's eyes. **NO OIL OR OTHER NON-WATER SOLUBLE PREPARATION SHOULD BE PUT INTO THE EYES.**

RESPIRATORY INVOLVEMENT: Anyone overcome by an ammonia atmosphere should be removed to fresh air at once. He should be kept warm and artificial respiration (back pressure, arm lift or back pressure, hip lift) should be started at once if breathing is labored or has stopped. Oxygen should be given at the same time.

Symptoms of developing respiratory difficulty are hard to spot. Anyone who has been in a concentration of ammonia of above 1,200 p.p.m. for more than half an hour without respiratory protection should be assumed to be in danger. He should be kept lying down, warm, and not allowed to move. One hundred per cent oxygen should be administered against an exhalation back pressure of about two centimeters (1½ inches) of water. Oxygen should be administered until it is no longer necessary.

The conventional symptoms of developing pulmonary edema must be watched for. Anyone who has been exposed to ammonia and who breathes in short, rapid, shallow breaths should be immobilized and given oxygen. In most cases, 24-hour bed rest under observation will be necessary before it can be determined that the victim is out of danger.

Anyone who has been exposed to high or unknown concentrations of ammonia and who has ammoniacal breath, tightness of the chest, bloodshot eyes with swollen lids, and a cough which may discharge bloody mucus is in serious trouble. Such a person should be immobilized at once, his eyes washed, and oxygen administered, as indicated above, immediately. He should be forced to lie down and kept warm.

(Recommendations of Manufacturers Chemist Association.)

The Delivery of Health Care

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THE PURPOSE of being here is to bring you information that I feel is important for your awareness of some of the problems facing medicine today. It is important because the decisions we make are going to materially affect the way medicine is practiced in the near and probably distant future.

Change is inevitable, and debate about whether a change would in fact be progress or not is academic. My purpose is to bring as much information to you as I can to help you be more aware of some of the *factors* involved, *implications* of change, *threat* to not only the providers but to the recipients of medical care. Together we can arrive at an informed decision and course of action to help guide the changes which are and will continue to take place.

I will go into the factors demanding change a little later. I mention threat because there is a real threat that the recipients would receive substandard care, both in quality and comprehensiveness, if some of the current proposals become effective. There is also a threat to the medical profession's opportunity to be actively involved in changing patterns of delivery of health care.

It is my conviction that we in medicine must demonstrate our concern by exercising the opportunity to be constructive and progressive in our deliberations. I will discuss a method we have available, then hope there will be time for questions when I have finished.

I will briefly outline the current system for the delivery of health care, the forces acting to demand change in the present system, the obligation I feel organized medicine has relative to changes, and one area of opportunity that the medical profession has available to help guide the current changes in delivery of health care services.

The present system has been much maligned and described at times as the "corner store" type. The system is the traditional physician-patient relationship. In my opinion, this is still the ideal relationship. The physician has, and will continue to have, the responsibility of deciding treatment patterns—though he will of necessity have to delegate some of the mechanics of treatment to other trained support personnel. The system, as well as

the previous education of the physician, has been acute, crisis-oriented in nature. In spite of all the criticism, the system has worked and has produced, in most instances, quality care. I would point out that the criticism is to a major degree generated by economics and the lack of availability rather than the quality of care given.

The forces which have been active in forcing change can be classified into four areas: (1) economic; (2) legislative; (3) social; and (4) the news media. One economic change is the increased income of a major portion of the working population. The effect of this increase has contributed much to a second factor, that of inflation. The inflationary effects on all phases of our economic stability are well known. The third economic factor is the increase in large group employment by all phases of labor. The effect of organized labor, in making the demands for salary increases as well as fringe benefits at little or no cost to the individual, results in many unrealistic demands for services. The fourth economic factor is the freeze of physicians' fees for all those covered under Titles XVIII and XIX, on December 31, 1968, and the later effect of the proration decision by the Kansas Board of Social Welfare.

There are many legislative decisions which have the effect of demanding change. First was the declaration by Congress that health care is a right and must be available to all. Following this, the passage of Medicare (Title XVIII) and Medicaid (Title XIX) had far-reaching effects on our present system of health care. One of the current amendments to H.R. 17550 deals with the PRO concept (Peer Review Organization). Another is the current Part C amendment to Medicare. These will eventually pass in some form. All of these amendments have the effect of increasing the demands for changes in the current system of delivery of health care.

Another large category of legislative activity includes the bills to establish mandatory, universal health insurance. One of these is H.R. 18567, known as the AMA Mediredit Bill, introduced by Fulton, Broyhill, *et al.* Another is H.R. 15779, known as the AFL-CIO National Health Insurance Act, introduced by Griffiths. Another is S. 4297, presented by Walter Reuther's Committee of 100, introduced by Kennedy, *et al.* Another is

* This paper was presented by Dr. Francis T. Collins, president of the Kansas Medical Society, at each of the district council meetings this fall.

S. 3711, known as "Medicare for All," introduced by Javits. Another bill is being written by the Aetna Insurance Company and will soon be introduced. From our information, this seems to be similar in many respects to the AMA Medcredit Bill. A final legislative or political activity which has produced much confusion and demands for change is the bureaucratic interpretation of federal laws by local politicians.

Pressures for change have come from many social factors. Urbanization is a realistic factor, resulting in the decrease of rural population and subsequent decrease in physician population in rural areas. A similar situation has developed in the ghetto areas of the larger cities. Complaints, whether real or fancied, by ethnic groups have caused much of the dissatisfaction.

The effects resulting from activities of the news media contribute to some of the criticism. It is popular to choose the total concept of health care to criticize. However, the criticism is directed primarily toward the medical care portion. We have seen this in television, radio, local and international press coverage. One of the most positive actions taken by Kansas physicians has been the employment of Mr. Parkinson and the use that the Kansas Medical Society is getting from this service. The information we supply is interesting, factual, and is serving the people by keeping them informed about items relative to health care as well as the delivery systems.

There are many shortcomings of insured group plans. Prepaid medical care programs as presently administered by group insurers may not be performing the public service they are philosophically intended to perform, and may be heading for an end which could be disastrous, not only to insurers and the medical profession, but to the public as well.

Weakness of the present arrangement is the basic concern with only dollars and cents, the lack of concern over public health needs, quality of medical services, and the public's ability to cope with the cost of adequate health services. Insurers, in general, set rates based upon "experience," *i.e.*, if the claims costs go up, then the rates are raised the next year. They are not too concerned with the "quality of medical care," which includes the services rendered by physician or hospital, fees charged, or services covered by the plan compared to area needs. Insurance plan rates are based upon income in "loading" rates, but not in providing services at fees applicable to income groups.

The obligations of organized medicine, as I see them, can be listed in four statements:

1. The obligation to help decide necessary changes in the delivery systems.

2. The obligation to help guide the changes in the areas that need changing.

3. The obligation to have the intellectual curiosity to determine the difference between what should remain and what needs changing.

4. The obligation to have the ability to live with the changes that are made and still provide quality medical care at the most reasonable costs.

The opportunity for the medical profession can be identified in three areas. First, the opportunity to be involved with all phases of planning in all aspects related to the total problem of comprehensive health care, on all levels. Second, there is a basic opportunity for us to be involved as an informed, active voter and to vote our convictions as a means to help guide the changes. Third, we have the opportunity to emphasize quality equally as much as the economic aspects of total health care. One approach to this opportunity is through foundation planning and activity. My following remarks will be directed toward a description of what a foundation is, what it is not, how foundations developed, their concepts, the responsibilities involved, and the benefits that may accrue when foundation plans function properly.

What Is a Foundation?

A foundation for medical care is an organization of doctors of medicine, sponsored by a local or state medical society. It is a separate and autonomous corporation with its own board of directors. Every physician-member of the medical society may apply for membership, renewed annually, in the foundation, and upon being accepted, may participate in all programs and activities.

A foundation for medical care is concerned with the development and delivery of medical services and the reasonable cost of health care, whether privately or publicly financed. A foundation also believes in the American tradition of free choice of personal physician and hospital by the patient, the fee-for-service concept, and the local control of over- and under-utilization through peer review.

A foundation for medical care establishes minimum standards for health care as practiced in the community, which offer broad coverage within a reasonable cost level. The foundation accepts the service principle of insurance, thereby making certainty of coverage available to all consumer groups covered by a sponsored program.

Quality of medical care is emphasized by foundations through utilization review techniques, both over-utilization and under-utilization, by both physician and patient.

In summary, the foundation for medical care is

really nothing more than a highly organized, active committee of a medical society.

What a Foundation Is Not

A foundation is not a union. Membership in the foundation is voluntary and does not affect the doctor's membership in the medical society or association, or his right to practice medicine. Fee maximums voted by foundation members are maximum schedules. The doctor may not go above the schedule, but may charge anything up to the maximum.

The foundation is not a local Blue Shield plan. Foundations are a catalyst. They do not collect premiums, fund monies or assume liabilities for payment under contracts it sponsors. Foundations believe in freedom of contract by the public. Foundations have in more recent times experimented with various new concepts of health care delivery, concerning themselves with bringing health care to local populations and migrant farm workers, working with neighborhood health centers, developing research programs through regional medical programs, experimenting with better ways of bringing medical care to those covered under Medicare and Medicaid.

Foundations are not a panacea for all of medicine's socio-economic problems. The foundation concept is merely a mechanism through which local thought and action is projected.

The First Foundation

The first foundation for medical care was established on March 1, 1954, in California. The specific and primary purposes of the foundation, according to the articles of incorporation, were to promote, develop and encourage the distribution of medical services by its members to the people of the area and adjacent areas at a cost reasonable to both patient and physician; to preserve unto its members, the medical profession at large, and the public, freedom of choice of both physician and patient; to guard and preserve the physician-patient relationship and its innumerable benefits; to protect the public health; to work and study, in cooperation with the Blue Shield and the Blue Cross plans, and other prepaid medical care plans that provide for periodic and realistic budgeting for medical care, and which subscribe to and provide for the freedom of selection and the guarantee of the physician-patient relationship in order to further promote the above purposes; to work with, and provide information to the public, chambers of commerce, agricultural associations, trade unions, employers' organizations, and other groups and individuals as to the reasonable cost of adequate medical care.

The foundation for medical care is a program of the medical society. The board of directors of the medical society nominates and elects the board of trustees of the foundation, thus insuring that the foundation will always be responsible to the parent corporation of the medical society. Every physician-member of the society may apply for membership in the foundation, and if elected (terms are for one year) may participate in all programs and activities of the foundation.

The ability to practice under a fee-for-service concept has been the cornerstone of the activities of all foundations for medical care.

The foundations were born at a time when health insurance programs were little more than in-hospital surgical schedules and came nowhere near reflecting the fees charged in the community. Collection losses in individual practitioners' offices were high. Misunderstandings on the part of the patient concerning what was covered and what was not covered under their insurance programs were many. Medical society grievance committees were continuously receiving complaints. These complaints invariably had to do with medical practices which at that time were not covered by insurance (*i.e.*, anesthesia as a professional benefit, pediatric services, detention with a patient, adequate outpatient x-ray and laboratory benefits, and the like).

As foundation committees moved to study all of the ramifications of prepaying medicine as it is practiced and bringing adequate medical care to all of the community within their ability to pay, the foundation soon came to the realization that criteria for coverage had to be developed.

Additionally, the public's desire for certainty of coverage could only be met by establishing fee guidelines.

The concept of using a grievance committee or an insurance mediation committee to "review questionable claims" was melded into the original foundation programs, but physician interest and involvement in this particular phase of foundation programs did not long stay at this level. Within the first year of the first foundation-sponsored program, review physicians were appointed to "visualize all claims." Thus, the dynamic entrance of foundations into utilization and quality review was born. Since that time foundation physicians not only have accepted the concept and need for peer review, but have expanded this need to the utilization and quality review of all medical services that are physician generated.

Review of fees and utilization by peers is designed to make sure the quality of health care is kept high, to insure that health money is well spent, to prevent over-utilization and under-utili-

zation of services, to guard against malpractice and abuse, and to give the physician a continuing education by self-evaluation.

Philosophical Concepts

THE PHILOSOPHY OF MEDICAL CARE FOR ALL, REGARDLESS OF ABILITY TO PAY

This concept is important in that traditionally it represents the way medicine is practiced. Since the doctors of the foundation areas take care of the people in the area, the foundation is a means to implement the care of these people.

THE PHILOSOPHY OF EQUATING MEDICAL CARE TO PREPAYMENT

Although the foundation's interest is with the total care of all of the people in its area, the practical place to start has been with group insurance.

Methods of covering persons under individual policies and methods of studying the covering of older aged persons and uninsured have been and will continue to be studied.

THE PHILOSOPHY OF BROADER COVERAGE UNDER PREPAYMENT PROGRAMS

By broader coverage, it is meant that concerted attempts must be made to prepay medical care the way medicine is actually practiced, and not simply to endorse in-hospital medical and surgical programs.

Medical procedures should be given attention in prepayment and adequate outpatient coverage should be offered.

THE PHILOSOPHY OF SERVICE CONCEPT

The service concept has arisen in the foundation principally because large and small consumer groups have voiced a preference for service-type prepayment programs. The consumer groups are actually prepaying for a unit of medical service rather than paying toward an undetermined level of medical care cost.

THE PHILOSOPHY OF CERTAINTY OF COVERAGE

As an adjunct to the service concept, certainty of coverage is possible, regardless of whether the procedures are covered in full, or whether there are deductibles, and whether or not there are co-insurance features.

The service concept demands that the fees are known and adhered to.

THE PHILOSOPHY OF ABUSE CONTROL

Practicing medicine is a privilege, but with this privilege comes responsibility. This responsibility

is evidenced by the establishment of audit committees within hospitals.

Under the foundation concept, there is an area-wide peer review committee established for both inpatient and outpatient medical care.

This review of the practice of medicine can best be carried out on a local level by medicine itself.

THE PHILOSOPHY OF FREE CHOICE OF PREPAYMENT PLAN BY CONSUMER GROUPS

Since foundations are interested in sponsoring prepaid medical care programs, they are interested in sponsoring all such programs that meet the foundations' criteria.

Thus, there is free choice of contract by each group, as well as encouragement to various service programs to meet foundation criteria and receive local endorsement.

Legal Concepts

THE CONCEPT OF MEDICAL SOCIETY CONTROL

Foundations must voice the official approval of the medical society or association. It is therefore necessary that the general membership of the society or association be those in which the ultimate control of the foundation is vested. Only the administrative members can change the bylaws of the foundations and the administrative members are the board of directors of the society or association.

THE CONCEPT OF SEPARATE BOARDS

Foundations are administered by a board of trustees, members of which are nominated and elected by the administrative members of the foundations. Most boards are composed solely of participating physicians, whereas in other instances, board members are composed of community representatives.

Because of work load, special talents and interests of individual physicians, the members of the board of trustees of the foundation for medical care should not necessarily be the same as the administrative members of the foundation for medical care.

THE CONCEPT OF RIGHTS OF PARTICIPATING PHYSICIAN MEMBERS

All fee maximums must be approved by the participating physician members.

THE CONCEPT OF MEMBERSHIP FOR ONE YEAR ONLY

Each participating physician-member must re-apply each year for membership.

A membership committee of the foundation reviews each application and makes a recommendation to the board of trustees, who then votes on each application. A two-thirds majority of the board is necessary for election.

THE CONCEPT OF FOUNDATION'S LEGAL SCOPE

It is not an insurer, or broker, or solicitor.

It does not bargain. It sets fee maximums which are open to all. It controls its members due performance of their obligations under foundation-sponsored programs.

Administrative Concepts

ADMINISTRATION OF USE OF RELATIVE VALUE SCHEDULE

If any work is to be done with insurance companies on prepayment, a maximum fee format is desirable. The state medical association's relative value study should be that format. If different formats were used in different areas, the chaos would make underwriting of foundation programs unattractive to the insurance industry.

ADMINISTRATION OF CLAIMS REVIEW

All claims rejected by computer are reviewed medically by a physician-member of the foundation and contractually by claims personnel. In most instances, draft authority is secured from the various insurance and service companies. It is the foundation's belief that this is an important administrative procedure in the interest of local control and responsibility.

Responsibilities of the Medical Profession

The responsibilities associated with the formation of such a plan, as they apply to the medical profession, can be classed in two categories. The first is merely membership in and active participation in another medical society committee. The second responsibility is to provide peer review and utilization services.

Resolution 70-5 passed by the House of Delegates meeting in Wichita supports the principle of peer review. I would like to present my evaluation of what this support should involve.

The purpose of providing peer review is:

1. To assure every patient of adequate value received for each health care dollar spent, regardless of who pays the bill.

2. To assure every patient that the quality and the quantity of his care is within standards of practice rendered by the physicians in his area.

The objectives of peer review are as follows:

1. To raise the standard of health care in this state.

2. To judge professional service through a system of peer review at the local level.

3. To provide appeal mechanisms through peer review at the state level.

The structure for accomplishing peer review:

1. Larger component societies will establish peer review committees and will resolve insofar as may be accomplished all local questions. Guided by state society recommendations, they will establish their own standards for community performance.

2. Each council district will have a medical services advisory committee serving as the district peer review committee and will receive for study and recommendation cases from the local or state level.

3. The Kansas Medical Society Council (acting as the ethics committee for the Society) will be the final authority (short of the AMA Judicial Council) on all questions involving ethics.

4. The Kansas Board of Healing Arts or the courts will judge legal questions.

The standards will be developed as follows:

1. State level committees will cooperate to determine practice levels (low and high usage) that appear to yield results for study. These are:

- Medical Advisory Committee
- Surgical Advisory Committee
- Utilization Study Committee
- Peer Review Advisory Committee
- Specialty Society Committees (14)

2. High yield examples will be projected into the EDP systems of fiscal intermediaries and of third party providers of care as screens to separate deviations from normal for peer review.

3. Recommendations shall be received from local peer review committees.

The achievements or results which will follow are:

1. Peer review, when in continuous function throughout the state, will assure purchasers of health care that high quality and necessary quantity care has been delivered.

2. Peer review will provide a conclusive answer to critics claiming widespread professional practice abuse.

3. Peer review will give each physician the knowledge that his professional service is evaluated by other physicians whose education, experience and dedication is equal to his own; that others in his area share equally with him the responsibility for the delivery of high quality, medically indicated quantity of care; and that he shares with all other physicians the obligation for establishing community standards.

In summary, I have defined the present system

(Continued on page 494)

The President's Message

One of the privileges of serving as the president of the Kansas Medical Society is communicating with you each month through the JOURNAL.

I want to close 1970 by thanking each of you for your cooperation in the Action of the Kansas Medical Society during the past six months.

At this Christmas Season, we should take a brief time to be thankful for the past and to anticipate the future with enthusiasm.

From our house . . . to your house

Best Wishes for a

Very Merry Christmas and
a Happy and Prosperous New Year

James T. Collins MD
President

Oliver B. Blef

R. L. Suede Swenson

Valentine Swann

Velma White

June Stratton

Mary Rogers

Leland Speer MD

Thos. J. Heals, M.D.

Kenneth L. Graham MD

Thomas F. Taylor MD

Emerson Joder, M.D.

Whisenand Jr MD

Lucien R. Pyle, M.D.

John C. Mitchell MD



Editorial COMMENT

These are words.

See the words?

See what words can do.

"Forty-eight and six tenths per cent of all general practitioners took no postgraduate course work during the ten-year period under study."

* * *

<i>"Type of practice</i>	<i>General</i>
Percentage taking circuit hours	43.9
Percentage taking non-circuit hours	38.6
Percentage taking home study courses	11.7
Percentage taking no postgraduate education	48.6"

* * *

"The report said a Kansas study showed that 48 per cent of the state's doctors took no education in the ten-year period studied, even though the state provided 'circuit rider' courses which went to the doctors."

* * *

The first quotation is from an article appearing in a respected medical journal early this year and admittedly "... focused only upon the participation of Kansas physicians in continuing education offered by the University." A number of questions might be raised about the conclusions derived from the study, but it is not our purpose to pursue them at this point.

The second quotation is a portion of a table from the same article showing "... enrollment in postgraduate education according to type of practice." Note that the 48.6 figure is now presented not as "no postgraduate course work" but "no postgraduate education." Quibbling? Well, let's see.

The third quotation is the last paragraph in an As-

The Mystery of Words

sociated Press release appearing as a front page article in the *Kansas City Star* for Sunday, November 8, 1970. The article reported that one of Ralph Nader's study groups said that "... the U. S. medical profession does not merit the trust placed in it primarily because patients cannot be reasonably sure of receiving competent medical care." This is the "report" which cited the "Kansas study."

But the "postgraduate course work" which became "postgraduate education" even before it left home base is now "no education"—and is applied to "... 48 per cent of the *state's doctors*" (*italics ours*)—rather than the limited group cited, which group is noted elsewhere in the original article as being only 35 per cent of all physicians in active practice during those years.

We assume the original article was prepared with the sincere and laudable intent it states: to determine certain limited features of the effectiveness of a state university medical school-oriented and implemented postgraduate medical education program. The practical success of this effort would have to be assessed by a biostatistician intimately acquainted with such programs. We are not attempting to measure this success. Our interest is in the manner in which it has become interpreted to the public as a condemnation of physicians, which we doubt was the intent of the authors.

The Nader recipe is one with in-born success. There is no human effort any place in the world today that does not contain some elements of inadequacy or failure when measured against perfect function. Take these inadequacies, which may be given some dignity of truth, boil with conflicts within the effort, season with distilled dissatisfaction of consumer and sprinkle liberally with publicity. Serves an unlimited number. It must be admitted that muckraking can have some reforming effect as long as human

function is fallible, but we are not convinced it is the best method of bringing about reform.

The group of statements quoted above is interesting because it is a pat example of the way words can distort the truth. Even if we assume honorable intent and virtuous effort on the part of the individuals involved, the result is an assessment which is patently ridiculous and does great injustice to a sizeable number of people. We refer not only to the Kansas physicians mentioned specifically or the profession as a whole which suffers some loss of stature from such a broadside. We think also of the great mass of patients who will feel some depletion of the faith it can place in its medical advisers. It is small wonder that physicians feel resentful that a considerable amount of time and energy must be diverted from specific medical care to the struggle to reestablish the relationship with their patients which is essential to their professional effort.

Beyond this immediate impact, however, we see a regrettable result in the effect of such pronouncements on physicians. . . . Being fundamentally human, they react to such criticism in a predictably human way: anger. We don't know how many times Pavlov had to ring his bell, but it is safe to say that the medical profession is sufficiently conditioned now that along with the saliva, a good deal of adrenalin begins to flow at the first ding.

The most difficult immediate task confronting the profession, as we see it, is not to devise some ideal medical care delivery system or to turn out new physicians so fast the stethoscope makers can't keep up, but the maintenance of self-control, personally and professionally. This means listening closely to the words being thrown at it, arriving at a considered interpretation of their meaning and importance and, most of all, responding with appropriate, meaningful and unequivocal words.

The ability to form and use words must be one of the greatest achievements of the human intellect. Was there ever such a mixed blessing?—*D.E.G.*

Continuing Education of the Physician

The following was prepared as a news release and sent to every newspaper, radio and television station in Kansas, as a reply to a bitter criticism leveled at Kansas physicians. The Editorial Board felt physicians might wish to see this, in case it failed to appear in their local newspaper.

On the front page of a newspaper widely circulated in Kansas last week appeared the headline, "Poor Health Care Assailed." This latest in a long string of attacks against medicine said, ". . . a Kansas study showed that 48 per cent of the state's doc-

tors took no education in the ten-year period studied, even though the state provided 'circuit rider' courses which went to the doctors."

The obvious fallacy of this statement is so blatant that no "Kansas study" is needed to refute it. On the surface, to say someone, anyone engaged in any activity whatever, took no education in ten years is impossible. However, here is some evidence to disprove the statement.

The circuit rider courses referred to represent a joint effort by the University of Kansas School of Medicine and the Kansas Medical Society to bring continuing education to physicians. Four times a year teams of experts present programs in eight Kansas cities to physicians on topics of varied and timely interest. By actual registration during 1968-69, 43 per cent of all Kansas physicians attended one or more of these courses. In a three-year period, 1966-1969, it was 59 per cent and during the five-year period 1964-69, 68 per cent of all doctors in this state had attended one or more of these courses. That leaves 32 per cent who had not taken advantage of this single type of education in a five-year period. So, their ten-year figure of 48 per cent is false.

If this were the only educational opportunity for the doctors of Kansas, the 32 per cent figure would be of concern. It should be noted the circuit course does not come to any of the largest cities in the state because their organized medical societies hold regular monthly meetings and almost always present a scientific program to educate their members. Attendance at these county society meetings varies of course, but it is rare when every member does not attend at least once during the year. Many attend all meetings. The society becomes concerned when fewer than half the membership is present on any single occasion.

Nor is this all. There are 14 specialty society organizations active in this state. Most hold scientific meetings annually, often in connection with the medical school. The largest of these, the Kansas Academy of General Practice, requires evidence of 150 hours attendance at some graduate education program every three years to retain their membership.

And there is more. All national specialty societies, including the Academy of General Practice, hold scientific conventions presenting the most renowned physicians in the world. All doctors are invited. They attend in large numbers as often as it is possible for them to get away. The American Medical Association holds two scientific conventions a year, registering as many as 25,000 doctors for a single meeting. Many Kansas physicians are present.

This is not yet the total story. Every member of the Kansas Medical Society receives the *JOURNAL OF*

THE KANSAS MEDICAL SOCIETY 12 times a year, which regularly carries scientific articles. Each receives 52 issues a year of the *Journal of the American Medical Association*, filled with scientific material and each receives one monthly specialty journal of his choice. Many, perhaps nearly all, subscribe to journals published by their specialty societies and more. Many hundreds of Kansas doctors subscribe to the bi-monthly Audio-Digest, a tape recorded condensation of the most important current publications. They listen to this in their car or at any other spare time. Who will deny this to be medical education?

Still, it is only part of the story. At every school of medicine, and especially at Kansas, there is offered continuing graduate education in every department. Hundreds of practicing physicians periodically visit their alma mater for a few days or a few weeks of refresher work. Every hospital holds monthly staff meetings (and 60 per cent attendance is required) where interesting or problem cases are reported and discussed. Very few doctors practice without the use of a hospital, and here every doctor obtains education even if he elected to attend nothing else!

Included among educational opportunities are the special scientific programs for physicians only that are regularly offered by voluntary health agen-

cies locally, by districts and at the national level. The American Cancer Society and its Kansas Division, the American Heart Association and its Kansas Division, the Tuberculosis and Health Association are only a few examples among many.

Every state medical society holds an annual meeting, so do the medical associations of other countries and the World Medical Association. Pharmaceutical companies provide all physicians a steady supply of scientific literature regarding use of their products. There is literally an endless opportunity and proof of its use can be obtained wherever there is a gathering of physicians.

At meetings of medical committees, in the staff room of every hospital, each doctor competes with the others for an opportunity to tell about a speech he has heard, a paper he has read, a new procedure he is curious about. At this point, after the formal lecture is over, when doctors get together for discussion, is where the true education begins and continues every day of the year for as long as the physician is in practice.

The doctor who has obtained no education in the last ten years has indeed not seen a patient in the last ten years, has not entered a hospital or visited with another physician during the last ten years.

KMS Education-Information

Activity Report—October 15–November 15

With the Community Health Week promotion behind us, we once again begin concentrating on the publicity facet of the information-education program.

During the 30-day period, the following releases were prepared and distributed to the Kansas print and electronic media:

1. A personalized release discussing the current status of the delivery of health care as it will be discussed at the 18 district meetings was prepared and is forwarded prior to these meetings to media in the area in question. This appears to be receiving good use on a local basis. A memo accompanies the release urging the media to interview Dr. Francis T. Collins and other KMS officials on site. This has produced some broadcast activity.

2. A story noting the talk Dr. Kenneth Graham recently made in Chicago concerning professional incompetence and the resultant requests for information on the Kansas law—exclusive in the nation—from other societies and groups interested in working for a similar regulation.

3. A 1,400-word feature story on the role of the computer in modern medicine.

4. A story noting that Governor Robert Docking proclaimed the week of October 18-24 Community Health Week.

The 50 fillers forwarded to daily and weekly newspapers during the previous 30-day period received particularly good usage, according to the Kansas Press Association's clipping service. The usage factor was so high, in fact, that we propose to forward from 50 to 80 fillers on a quarterly basis as opposed to the previously announced twice yearly mailing.

In addition, we will be forwarding selected news releases to the 165 members of the 1971-72 Legislature so that lawmakers can see the considerable scope of KMS activities. None of the releases relate to proposals being considered by the Legislature and are being forwarded strictly to increase liaison with this important group.

Vox Dox

(The deadline for letters to the Editor is the 20th of the month preceding anticipated publication.)

Dear Editor:

Over a year ago I wrote you a letter (commendatory) suggesting that the many physician-writers in our society be encouraged to express themselves in local newspapers or the JOURNAL. Now then, since my masterpiece (which is still collecting dust along with your mailbox) was never acknowledged, returned, and possibly burned, there is little assurance that the same Editor who, in desperation, is given to writing letters to himself would *now* be receptive. Shoot a gallon to me, Allen—the JOURNAL needs a transfusion of new expressions and refreshing ideas from all of us. Your space for Vox Dox is too small; my tensions are much greater!

The lingering feculence of diatribes about the medical profession written by many non-medical fringe boys is a pollutant worthy of our attack! We seem to be fighting a defensive uphill battle without the courage to toot our own horn. Please change your resolution and print a commendatory article if anyone ever writes one. Persuasive planners have led us to believe that little of what we do or have done is worthy of retaining in the modern armamentarium of medical practice. In fact, fear of reprisal for over-utilization tends to cloud the physician's judgment when the Public proboscis gets out of joint. Our people have the right to medical care as much as the right to eat, sleep, shelter, breathe, and to the sun. It's all relative. We can't all bathe in the ocean, go south with the birds for the winter, or expect a miniature Mayo Clinic in every little hamlet. How idiotic we have become to sit around in endless councils and meetings to hear the 51 per cent consumers discuss our "needs" for a revolutionary new delivery system. The endless jibbering about delivery of medical care centers around the supply and geographical location of well trained physicians.

What business or profession will survive by subjecting long years of technical and intensive training to whims and uninformed judgments by an unfair public brainwashed to demand and expect while bureaucrats command and direct? If the public wants more via government intervention then let them prepare to pay and pay for what devoted physi-

cians used to do solely for the professional lift of accomplishment.

VALE PAGE, M.D.
Plainville, Kansas

P.S. If you must edit this don't print it. I prefer to accept blame for my own utterances.

Dear Editor:

Just a few lines to commend you on the Editorial in the October issue of the JOURNAL. I appreciated your reference to the relationship of food, clothing, and housing to medical care. It has been my feeling that the AMA has been wrong and the Government socialistic planners are wrong in declaring medical care a right when the basic needs of life such as food, clothing, and shelter have not been made a right and declared available to all, but only provided on the basis of need. Medical care, likewise, should be provided on the basis of need and not as a basic right.

You also discussed the matter of the availability of medical care. Because of the news media, the public is now expecting immediate and miraculous care, and this is an obvious physical impossibility and we have a real task to refute this position. It is not a matter of providing total care as an impossibility, but a matter of as much quality care as possible which is far less than total care.

Sincerely yours,
S. C. McCRAE, M.D.
Salina, Kansas

Dear Editor:

Although I am a newcomer to your society I am prompted by your encouragement to communicate. You will probably receive other letters in response to the article by C. Arden Miller, M.D., who lectured on 24 April 1970 to the Student-Faculty Convocation at KU Medical Center.

There is no question that "consumer control" is coming to medicine. The only question is how uninformed and punitive it may be. It will probably be uninformed and punitive in proportion to the degree that it is political. The lay control of our legal system by lay juries is highly debatable in my view, but the lay control of our educational system, our law enforcement system and our military forces is characterized by a tendency of those laymen in control of the system to become more and more like the practitioners of the system as they become more and more educated in what is involved in education, law enforcement and military. The only ex-

ception to this occurs when the lay group doing the controlling adopts goals which are primarily political. The extent to which this happens in turn is governed by the extent to which the system itself is a cause célèbre, attracting the self-serving interest of politicians or ideologists.

I am unimpressed by a system of government which the proponents assure me will work well if it is run by virtuous men. Even prisons run well if only virtuous men are involved in the administration. What I want to see is a system of control that will work well with the ordinary assortment of real human beings that become involved. This in turn is determined by the laws and policies that set up the system. The laws and policies are determined in turn by the opinions of the law makers. These in turn are determined by the spirit and feelings of the public at the time the law is written.

What I am getting around to saying is that the practice of medicine, however well intentioned the individual overburdened practitioner has been, has produced exactly the public uproar we now see. Practicing as I do in the midst of a group of physicians whom I vastly respect for the knowledgeable way that they conduct their terribly demanding practices, it is hard for me to say this, but there is no alternative. Physicians must become *visibly* more concerned with the rearrangements of patterns of health care that are necessary to produce adequate care for all. We are accustomed by tradition to maintaining the quality of practice and making such improvements as we find necessary, deliberately avoiding publicity. This won't work. It gives the impression to the public that we are doing nothing. This is exactly the impression that will be used by those law makers who desire a rigid and punitive system of control of medical practice to justify their decision.

The assumption by the average practicing physician that things must somehow turn out well if he just continues to do his work honorably is unjustified. In the real world, good is not always rewarded. Not only have we got to work between ourselves, our local hospitals, and the medical schools to bring about proper changes in the system, but we have got to actively recruit interested lay persons, and even uninterested lay persons, into the rearranging process. I have never lived in a state where the average member of the population was so fair, approachable, hard working and interested in civic life as this state. We are fools if we fail to take advantage of it. Every city is filled with civic groups, volunteer groups and other groups of lay persons who are interested in improving the quality of life in that city. The average county medical society should deliberately open its doors to these people, invite them in, and either set up a deliberating and plan-

ning group or take vigorous interest in the groups such as the Local Action Groups of the Regional Medical Program or Comprehensive Health Planning groups that already exist. Anything else will result in a politicalized disaster, and it will be our fault. It won't be our fault because we have not been practicing bad medicine; it will be our fault because even practicing good medicine is no longer enough.

Very sincerely,
JAMES W. WIGGS, M.D.
Great Bend, Kansas

Delivery of Health Care

(Continued from page 488)

of delivery of health care, itemized some of the forces precipitating demands for changes in our system, outlined medicine's responsibility, and am recommending that our society adopt a foundation type approach to enable the Kansas Medical Society to demonstrate leadership in helping solve the problem of delivery of health care.

One of the actions of the Council meeting on September 27, 1970, was to pass the following resolution:

Resolved, That the Executive Committee come up with a foundation plan for consideration at the next meeting, and that the information be disseminated to the whole Society, not later than March 1, 1971.

In response to this resolution, your Executive Committee is in the process of accumulating data in three different areas: (1) exploring the methods of forming the constitution and bylaws for a foundation corporation, and whether or not this could come within the aspects of our present corporation; (2) methods to use in developing computer screens and minimum standards of health care plans; and (3) the mechanics of establishing state-wide Kansas Medical Society supervised peer review, including usual, reasonable customary fees based on the Kansas Relative Value Schedule and physician-generated services.

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HAPPY TO ASSIST YOU**



Blue Shield

As Title XIX Fiscal Agent, planned progress in claims service in 1970 is Blue Shield's most important product.

Planned progress analyzes problems and coordinates action programs that take into account the needs of medicine, Blue Shield, and the state agencies involved while being economically feasible.

As an analogy, planned progress can be compared to the football team's two minute drill: The object is to get across the goal by short sideline plays rather than going for the bomb on three consecutive downs and then being forced to punt.

Blue Shield's first 1970 short yardage gain in Title XIX was a staged direct filing of Title XIX claims from the doctor's office to Blue Shield as the fiscal agent. Direct submission of claims cut an average of five days processing time from the "clean" claim by eliminating duplication of effort which was both expensive and time consuming for doctors and program administrative personnel.

Although the gain in direct submission processing time was substantial, eligibility rejects on Title XIX patients increased. This problem is being overcome by two routes of attack:

First, computer capability has been developed so that Blue Shield can convert certain sections of the Title XIX patient's identification number to correspond with eligibility changes. This will allow prompt payment of claims which would have previously been denied on the basis of eligibility.

Second, a communications system is being developed which will provide a doctor specific information regarding the current Title XIX status and identification number for a given patient where eligibility changes have occurred recently.

Another segment of planned progress in Title XIX claims administration is a more direct form of computer input and computer processing of Title XIX claims.

This was accomplished by converting from a punched card system to use of special typewriters

for inputting claim information into the computer. This more direct form of computer input reduces the chance for clerical error and is faster than the key-punch method of input. As an example, approximately \$1,040,000 of physician Title XIX claims were processed in October, 1970, as compared to \$625,000 in October, 1969.

Approximately 85 per cent of all doctors' claims are now computer processed. This means that the information on the Title XIX claim form is typed up and "read into the computer" by use of optical scanning equipment where the charge information is checked against the doctor's usual and customary charge profile.

There, claim payment determination is made to be stored in the payment tape which is subsequently sent to the state for check writing. All "routine" claims are processed in this manner which has resulted in a substantial reduction of "in-house" claims inventory.

Individual consideration by professional review committees is still given those claims where procedures require unusual complex departure from generally acknowledged medical-surgical technique.

Another innovation employed through the computer is a "check" of the doctor's name against his Title XIX provider number. Before this "check" was implemented, transposition errors had frequently resulted in doctors receiving Title XIX payments for patients who were not under their care. The computer "check" has produced positive results in this area.

During its first three years of existence, many factors have created challenges in the Title XIX program as a whole. Many of these factors have stabilized during 1970, making planned, staged progress in administration a reality instead of a hoped for possibility.

One of the most encouraging aspects of these administrative improvements is the knowledge that the fiscal remuneration aspect will be adequate to cover operating expenses on a no profit-no loss concept.



Personalities—IN KANSAS MEDICINE

The American College of Physicians recently announced the election of the following KMS members as Fellows or Members of the specialty society: Fellows: Hubert H. Bell, David M. Pugh, R. Neil Schimke and William T. Sirridge, Frederick F. Holmes, and Gerald R. Kerby, Kansas City; Cecil R. Chamberlin, Jr., and Philip Woolcott, Jr., Topeka; and Clifford S. Reusch, Winfield. Members: Ralph G. Robinson, Kansas City; Roscoe F. Morton, Arkansas City; Delmas A. Jackson, Salina; Robert Cancrow, George M. Penn, and Jack L. Ross, Topeka; E. David Kirk, Jr., M. Robert Knapp, and Lew W. Purinton, Wichita.

Arthur P. Klotz, professor of medicine and chief of the Section on Gastroenterology at KUMC, participated in a roundtable discussion on "Diagnosing the Causes of Nausea and Vomiting," held at the Camino Real Hotel, Mexico City, in October.

"Drugs and Today's Youth" was the subject of a talk given by Jerald L. Starkey, Russell, at Lucas High School in October.

B. Morris Hopkins, Scott City, participated in a panel discussion on drug abuse at Wichita County High School in October.

Evalyn S. Gendel, Topeka, was honored with the American School Health Association's Distinguished Service Award during the organization's annual convention in Kent, Ohio, in October.

Among those inducted as new Fellows of the American College of Surgeons during the annual clinical congress of the organization held in Chicago in October were: C. Reiff Brown, Great Bend; Lynn D. Ketchum, Kansas City; John L. Reese, Lawrence;

Kenneth C. Wiebe, Prairie Village; Raul E. Brito, Jan deBakker, Gregg M. Snyder and Terry A. Tracy, Wichita; B. John Ashley, Jr. and Paul H. Kindling, Topeka; and James N. Winblad, Winfield.

Lee S. Fent, Newton and Robert E. Switzer, Topeka, participated in a regional conference on smoking and health at Kansas State University, Manhattan, in October.

F. P. Wolff, Pratt, and Ed Tihen, Wichita, were delegates to the American Society of Internal Medicine meeting in Scottsdale, Arizona, in October.

Arthur E. Cooper, Norton, announced his retirement from practice in December.

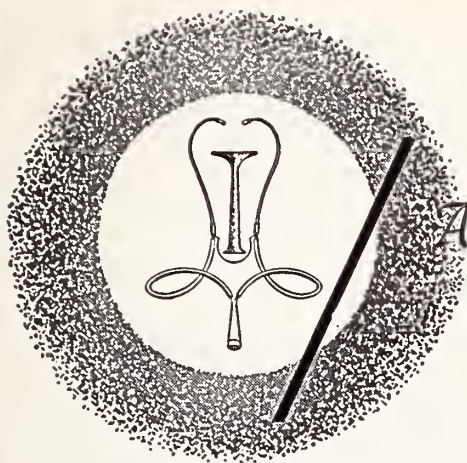
Floyd C. Beelman, Topeka, received the Pfizer Award of Merit at the 19th conference of the U. S. Civil Defense Council at Fort Worth, Texas in October. Further honoring Dr. Beelman for his work in civil defense in Topeka, Mayor Gene Martin proclaimed November 3 "Dr. Floyd C. Beelman Day" for Topeka, and presented Dr. Beelman the Golden City Medallion, the highest honor a private citizen can receive from the city of Topeka.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

Bruce Barrick, M.D.
74th & Grandview Road
Shawnee Mission, Kansas 66204

George Douglas, M.D.
Box 209
Lakin, Kansas 67860



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the Doctor's Calendar. Notice of the session is posted in advance to allow the physician time to make preparations.

JANUARY

- Jan. 2-21 American College of Surgeons, scientific winter cruise, combined with sectional meetings, Panama City, Caracas, and San Juan. Write: American College of Surgeons, 55 E. Erie St., Chicago 60611.
- Jan. 6-9 American Rheumatism Association, Washington-Hilton Hotel, Washington, D. C. Write: Miss Margaret M. Walsh, 1212 Avenue of the Americas, New York 10036.
- Jan. 7-9 National Conference on Cancer of the Colon and Rectum, sponsored by the American Cancer Society, Hotel del Coronado, San Diego. Write: Roald N. Grant, M.D., American Cancer Society, 219 E. 42nd St., New York 10017.
- Jan. 15-16 Conference on the Adolescent in Family and Group Therapy, American Society for Adolescent Psychiatry, New Orleans. Write: Max Sugar, M.D., 3625 Chestnut St., New Orleans 70115.

FEBRUARY

- Feb. 7-8 Industrial Audiometric Technicians Training Course, St. Mary's Hospital, Kansas City, Missouri. For reservations write: Greater Kansas City Hearing and Speech Center, Kansas City General Hospital and Medical Center, 24th & Cherry Sts., Kansas City, Missouri 64108.
- Feb. 16-19 Conference for the family practitioner of medicine, University of Iowa Health Center, Iowa City. Write: Director, Office of Medical Education, 245 Medical Research Center, University of Iowa, Iowa City 52240.

Feb. 19

American College of Physicians, Kansas Chapter, Glenwood Manor, Overland Park, Kansas. Write: John L. Morgan, M.D., 919 W. 12th Ave., Emporia 66801.

Feb. 21-26

Annual meeting of the American Academy of Forensic Sciences, Del Webb's Towne House, Phoenix. Write: Harlan L. Kimball, American Academy of Forensic Sciences, 750 Main St., Suite 1000, Hartford, Connecticut 06103.

- Feb. 26-Mar. 5 Annual congress and teaching seminar, International Academy of Proctology, Mexico City. Write: Alfred J. Cantor, M.D., International Academy of Proctology, 147-41 Sanford Ave., Flushing, New York 11355.

MARCH

- Mar. 3-6 Midwest Clinical Conference, sponsored by the Chicago Medical Society, McCormick Place, Chicago. Write: George F. Lull, M.D., 310 S. Michigan Ave., Chicago 60604.
- Mar. 6-11 American Academy of Orthopedic Surgeons, Civic Center, San Francisco. Write: Charles V. Heck, M.D., 430 N. Michigan Ave., Chicago 60611.
- Mar. 26-28 American Society of Internal Medicine, Brown Palace, Denver. Write: Mr. W. R. Ramsey, Third at Market, San Francisco 94103.
- Mar. 27-Apr. 1 American College of Allergists, Fairmont and Mark Hopkins Hotels, San Francisco. Write: John R. Ausband, M.D., Bowman Gray School of Medicine, Winston-Salem, North Carolina.

- Mar. 28-Apr. 2 American College of Physicians, Hilton Hotel, Denver. Write: Edward J. Rose-now, Jr., M.D., 4200 Pine Street, Philadelphia 19104.
- Mar. 29-Apr. 3 American College of Radiology, Chase Park Plaza, St. Louis. Write: W. C. Stronach, LL.B., 20 No. Wacker Drive, Chicago 60606.

POSTGRADUATE EDUCATION

University of Kansas:

- Feb. 8-9 *Cardiac Auscultation*
- Feb. 18-19 *Hearing and Speech*
- Feb. 22-24 *Surgery*
- Feb. 24 *The Mentally Handicapped Child (Great Bend)*
- Mar. 8-10 *Pediatrics*

For further information write the Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas 66103.

University of Colorado:

- Jan. 17 *Colorado Academy of General Practice*
- Jan. 18-23 *General Practice Review*
- Feb. 1-6 *(repeat of January GP Review)*
- Feb. 8-12 *High Risk Infant Care (limited)*
- Feb. 16-19 *Surgery of the Hand.*

For further information write the Office of Postgraduate Medical Education, University of Colorado School of Medicine, 4200 E. Ninth Ave., Denver 80220.

The National Academy of Sciences-National Research Council invites submission of current data on somatic, genetic, and environmental effects on human growth and development. This material is requested whether or not it has been published. Work in progress which is yet to be reported is of particular interest. The request is made in order to assist an advisory committee of the National Research Council in its deliberations concerning ionizing radiation effects upon human populations. Please send material to the Division of Medical Sciences, Attention: Dr. A. W. Hilberg, National Academy of Sciences, 2101 Constitution Avenue, Washington, D. C. 20418.

Along the Bookshelf—

Clendening Medical Library

RECENT ACQUISITIONS

- Bredow, Miriam. The medical assistant; a guide to clinical, secretarial, and technical duties. New York, McGraw-Hill, 1970.
- Cantor, Meyer O. Abdominal trauma. Springfield, Illinois, Thomas, 1970.
- Chafetz, Morris Edward. Frontiers of alcoholism. New York, Science House, 1970.
- Community medicine; teaching, research and health care. New York, Appleton-Century-Crofts, 1970.
- Easson, William M. The dying child; the management of the child or adolescent who is dying. Springfield, Illinois, Thomas, 1970.
- Electric hazards in hospitals; proceedings of a workshop, held on 4-5, April 1968. Washington, D. C., Published by National Academy of Sciences, 1970.
- Flint, Thomas. Emergency treatment and management. Philadelphia, Saunders, 1970.
- Harris, Harry. Principles of human biochemical genetics. New York, American Elsevier, 1970.
- Harvey, Abner McGehee. Differential diagnosis; the interpretation of clinical evidence. Philadelphia, Saunders, 1970.
- Leis, Henry Patrick. Diagnosis and treatment of breast lesions. Flushing, New York, Medical Examination Publishing Co., 1970.
- Lewin, Karl Kay. Brief encounters; brief psychotherapy. St. Louis, Green, 1970.
- Motzkin, Donald. Office urinary tract bacteriology. Springfield, Illinois, Thomas, 1970.
- Nicholson, Max. The environmental revolution; a guide for the new masters of the world. New York, McGraw-Hill, 1970.
- Quality of survival of the cancer patient. Hartford, Connecticut, American Cancer Society, 1969.
- Skidmore, Max J. Medicare and the American rhetoric of reconciliation. University, University of Alabama Press, 1970.
- Stevenson, Alan Carruth. Genetic counseling. Philadelphia, Lippincott, 1970.
- U. S. Division of Health Resources. Nursing Home Branch. Long-term care facility administration; case study manual. Washington, D. C. For sale by Superintendent of Documents, United States Government Printing Office, 1970.
- Whitehead, Anthony. In the service of old age; the welfare of psychogeriatric patients. Baltimore, Penguin Books, 1970.

KANSAS STATE DEPARTMENT OF HEALTH
TOPEKA, KANSAS

Epidemiology & Disease Control Services—Registration & Health Statistics Services—
Kansas Morbidity Incidence
Summary of Cases Reported in September, 1970 and 1969

<i>Diseases</i>	1970	<i>September</i>		<i>January-September Inclusive</i>		
		1969	<i>5-Year Median 1966-1970</i>	1970	1969	<i>5-Year Median 1966-1970</i>
Amebiasis	2	2	2	19	3	11
Aseptic meningitis	4	1	4	22	9	7
Brucellosis	1	—	—	2	1	2
Diphtheria	—	—	—	—	—	—
Encephalitis, prim., infect.	2	1	2	12	8	12
Encephalitis, post-infect.	—	1	—	—	2	2
Gonorrhea	668	462	436	5,120	3,767	3,292
Hepatitis, infectious	48	29	29	370	224	224
Measles (Rubeola)	—	1	*	69	8	*
Meningococcal meningitis	—	1	—	5	15	14
Mumps	4	4	*	143	97	*
Pertussis	1	—	—	3	—	4
Poliomyelitis	—	—	—	—	—	—
Rheumatic fever	—	1	—	4	7	3
Rubella (German Measles)	—	—	*	51	46	*
Salmonellosis	43	34	34	194	140	189
Scarlet fever	2	5	5	73	28	51
Shigellosis	23	11	11	78	60	60
Streptococcal infections	370	98	98	3,399	1,821	1,821
Syphilis	139	123	123	1,040	1,451	960
Tinea capitis	1	3	3	22	34	37
Tuberculosis	17	17	17	158	161	174
Tularemia	—	—	—	1	3	3
Typhoid fever	—	—	—	—	—	1

* Statistics not available for 5-year median.

ARTHROPOD-BORNE ENCEPHALITIS—CURRENT STATUS

Unusually dry weather during the mid-part of the summer, preceded and followed by wet conditions, contributed to unusual mosquito catches compared with past years. Generally, numbers of mosquitoes collected of the genus *Culex*, which serve as vectors of encephalitis in Kansas, were lower than previously collected. This was possibly reflected by the fact that only a few suspect cases of either Western Equine (WEE) or St. Louis (SLE) Encephalitis were noted, with no confirmations during the normal July-September period. However, in mid-October, seven confirmed cases of St. Louis Encephalitis were reported from an area bounded by Pratt, Wichita, Lindsborg, and Russell. These cases all occurred within a two-week period.

Case reports of Western Encephalitis in horses continue to be received from around the state. Veterinarians from 20 counties of the state have reported a total of 35 horses with the disease. Of

these, eight died and 15 recovered. In 14 instances, the horse's condition was not stated. About half of the cases occurred since September 18.

Six of the eight sentinel chicken flocks in the state contain positive chickens. Three of these flocks (Belleville, Colby, and Great Bend) show WEE activity, and six flocks (Belleville, Phillipsburg, Colby, Scott City, Dodge City, and Great Bend) contain SLE positive chickens. The SLE virus appeared during the latter part of September, which was about a month later than usual, although WEE virus activity began as expected in late July.

At the present time, considering the elimination of the mosquitoes by cold weather, further transmission of the virus is not expected. However, since there is a 10-14 day incubation period, additional cases may be reported which were actually acquired before the mosquitoes disappeared. Therefore, this year will be above average in the number of human cases of encephalitis reported, but well below the epidemic levels experienced in the past.

Woman's Auxiliary

When it was time to write this month's column for your JOURNAL it occurred to me to ask myself just exactly what your mental picture of the typical medical auxiliary member might be. A sudden horrifying flash of insight implied that it could be possible that most of you might think all medical auxiliary members fall into that "awkward age," . . . you know, too old for a teddybear and too young for medicare. But that simply isn't true. We'll admit a lot of us have been around for a long time, but *some* of us haven't, particularly one special group, the wives of interns and residents, or what we call the WA-SAMA girls. These are members of the Woman's Auxiliary to the Students' American Medical Association.

To be perfectly frank, these little cuties aren't exactly auxiliary members, but rather a junior member club of the auxiliary that was formed in 1958 by Mrs. George Garrison, who was their first liaison from the national auxiliary. There are now 80 such groups in the United States, one of which is in Wichita. This Kansas chapter has a membership of 38, but there are often as many as 52 at the meetings.

WA-SAMA was organized originally because the medical auxiliary women felt that our younger potential members needed to know the aims, purposes and ideals of the medical profession, and to be aware of the responsibilities of a physician's wife in the community where the husband will practice. They also felt that the interns' and residents' wives needed a happier training period experience with a social life within the medical students' families that was compatible with their financial means and time limitations.

Keeping this in mind, the WA-SAMA developed its program around "time" contributions during its first ten years. For instance, some local chapters contributed time in baby-sitting services for working wives, or set up a baby equipment and maternity clothes loan closet. Nationally, the young women organized a housing information service for members or potential members on the move. Information was provided tailored to particular needs, including the household pet. Housing information service lists of accommodations were made, giving rental rates, the proximity to the medical school or hospital, shopping centers, churches and schools and these were sent to anyone requesting them. They even listed the landlords who look favorably on the family's pet dog or cat. A second service was the welcome wagon, maintained by some WA-SAMA groups or medical auxiliary groups for a new mem-

ber coming into their area. Again, all that was necessary was to complete a request form from any chapter president or the national coordinator.

This year the WA-SAMA girls felt that they had grown enough in stature to take on a national project and they are throwing their enthusiasm for their husbands' profession into stimulating high school students across the nation to enter paramedical fields. They are also working closely with the National Foundation March of Dimes on the Foundation's "Happy Birth Day Baby" program. Participation in the program is optional, and is only for the interns' and residents' chapters. Specific suggestions for needs within the program encompass the "disappearing nursery," a cart filled with toys, games and books for children to play with while waiting for clinic appointments, and a clean play area or a washable rug to sit on; a "layette bank" where new or good used items for the newborn are collected and presented to mothers as regular rewards at the clinics; a "maternity clothes closet" for mothers needing clothing; "Happy Birth Day Parties" to encourage mothers to get good prenatal care; hearing tests for newborns; rubella inoculation campaigns; and healthy baby weeks. About all the WA-SAMA members contribute is womanpower, but they say that they have plenty of that.

In Kansas, the Wichita women are aided by Mrs. Paul A. Lovett, their liaison. Their president is Mrs. John L. Diller, whose husband conducts the clinics at some of the Wichita health stations. Mrs. Diller is the state representative for WA-SAMA to the Kansas Medical Auxiliary and attends the state conferences. Auxiliary members help WA-SAMA through \$5 sustaining memberships, \$1 of which goes to the local chapter. Wichita recently won the award at their national meeting for the most sustaining memberships. They are currently boosting health careers and service projects. They also boast of having the first National WA-SAMA legislative chairman, Mrs. Dick Morgan, whose doctor husband is currently serving in the Navy. In addition, Mrs. Morgan is the legislative editor for their national newsletter *Spectrum*.

WA-SAMA members and their husbands are frequently asked to local medical society functions, so the next time you go to a local doings', look around for the bright new faces. They just might be some of our WA-SAMA girls, and believe me, these little cuties add a lot to *our* image. They might even help wipe out that "awkward age" impression.

Telephone. Gotta go. . .

Auxiliary Annie

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